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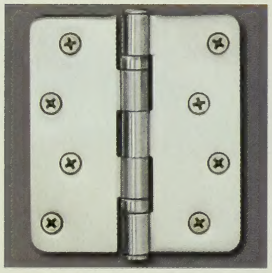
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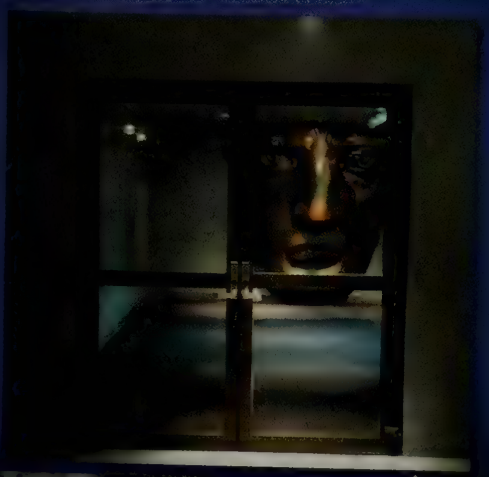
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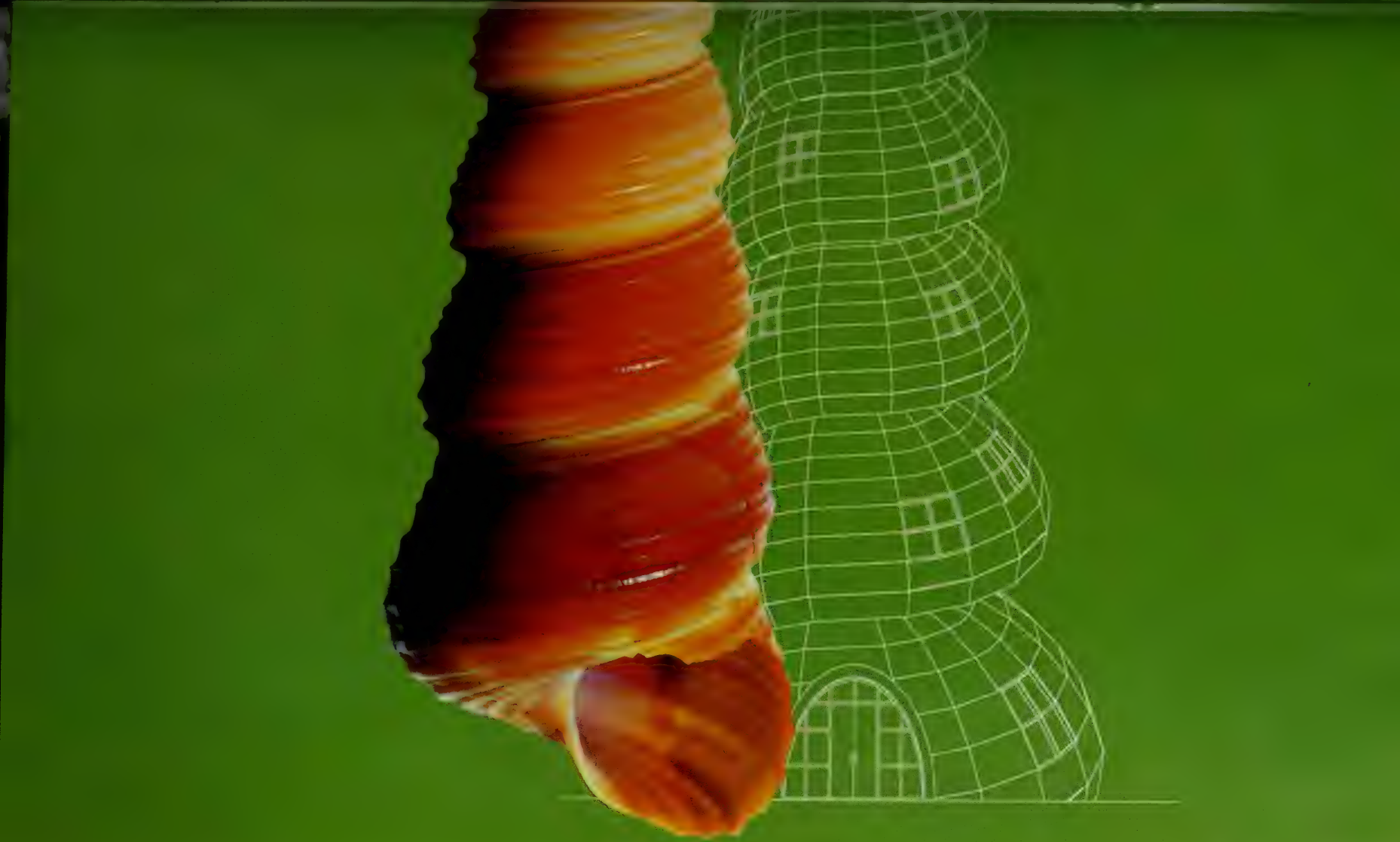
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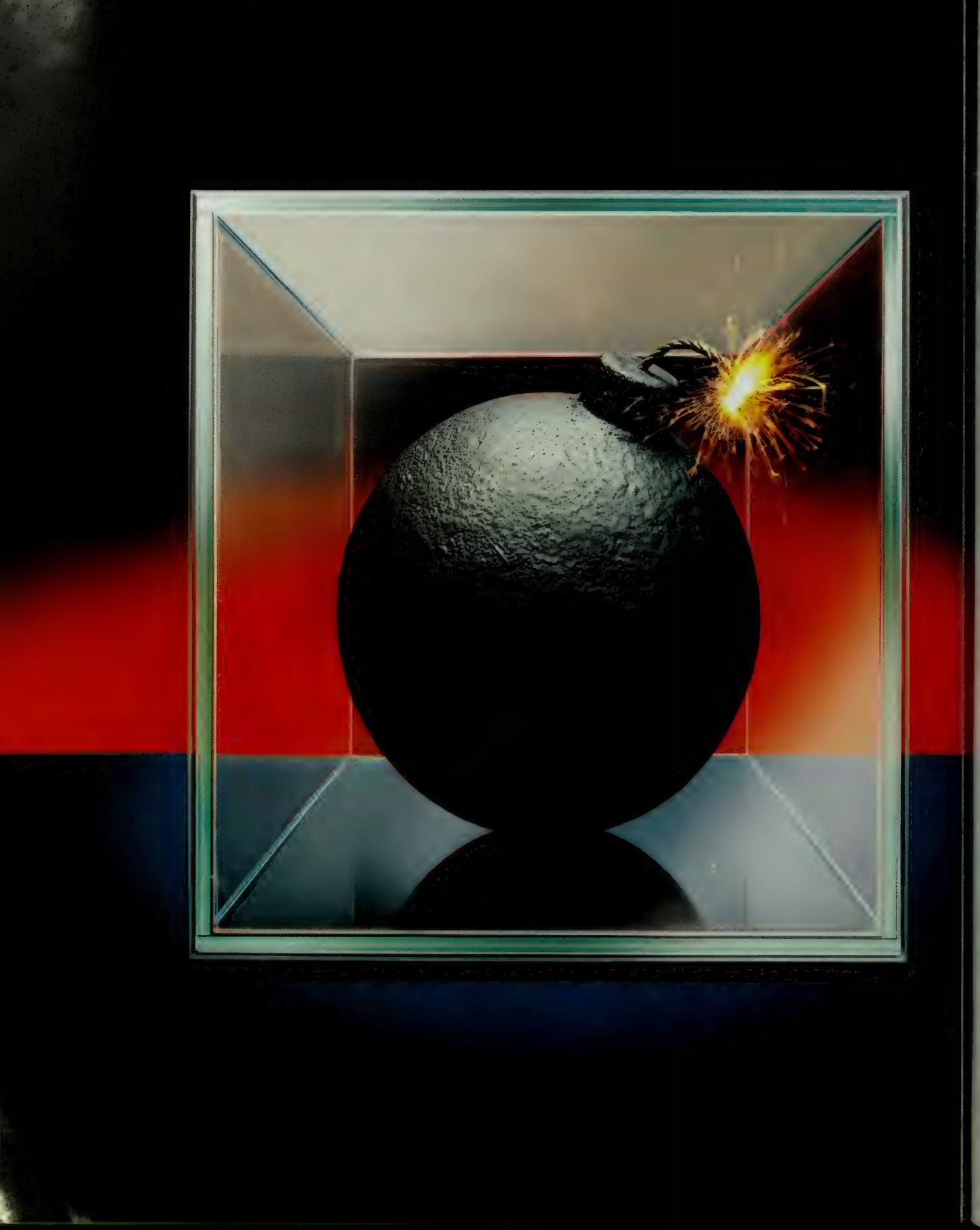
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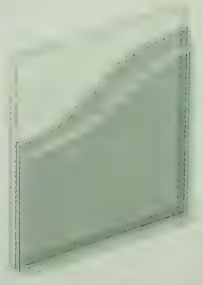


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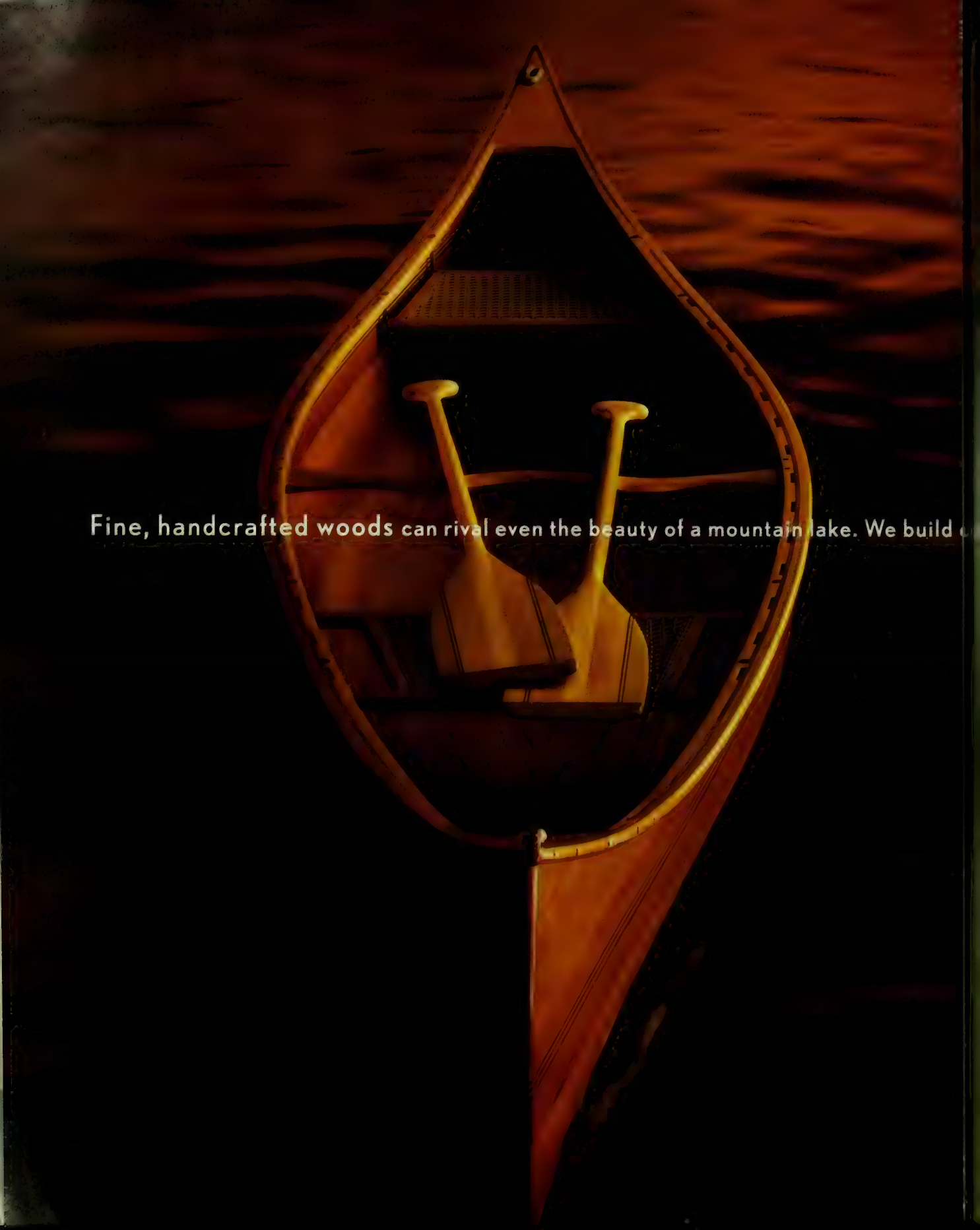
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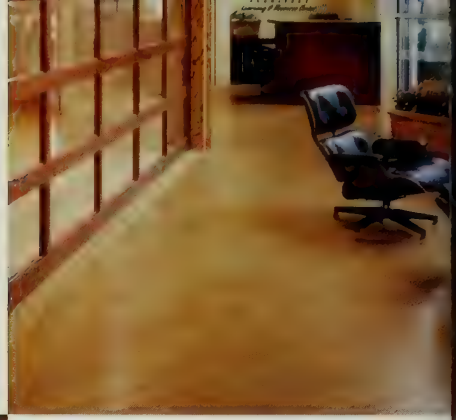
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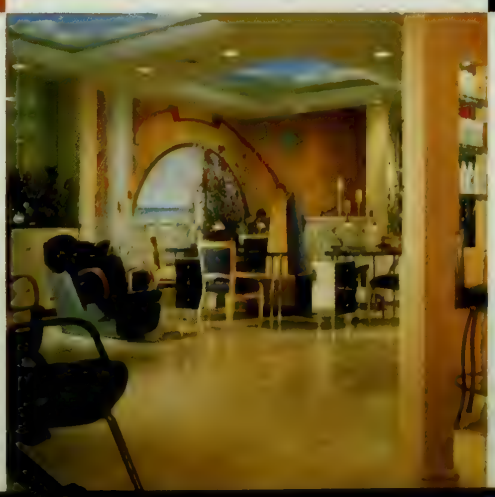
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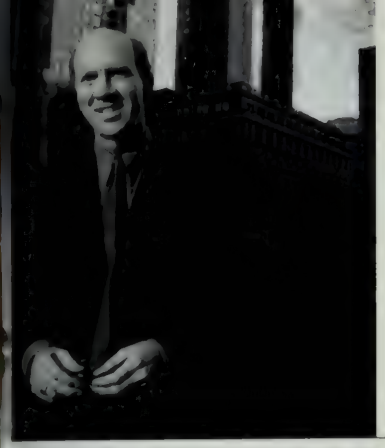


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New Kind of Hero

Editorial

By Robert Ivy, FAIA

When the last crowds have dispersed from the Plaka in Athens and the television ratings have been scrutinized high in midtown Manhattan, the real hero of the 2004 Olympics will emerge. Not winner Michael Phelps, the swimmer who generously removed himself from a slot in a final competition to give another teammate a shot at gold, nor Natalie Coughlin, with her sparkling, multiple medals. Instead, the surprise star will turn out to be Athenian architecture, both Classic and Modern, which has outshone them all.

These Olympics had all the makings of a Greek tragedy. Until the last moment, it seemed as if the impossibly complex new Olympic Stadium would not debut for opening day. What was this small nation of 11 million people up to, commissioning such ambitious projects with drop-dead deadlines? Yet planners tightly clutched a trump card—the stadium's roof had been fabricated off-site and dropped into place moments before curtain time. Ah, sweet victory, with applause and sighs all round.

From the theatrical opening ceremonies, punctuated by fireworks, to the glancing morning light, the Olympic Park both provided and took center stage. Seen by upwards of a billion people, the primary structures arched more than 230 feet above Athens's low-scale cityscape with a graceful, billowing signature emblematic of human accomplishment and artistry. Only the Parthenon, iconic temple on a hill, surpassed the newer additions; Olympic architecture had assumed the contemporary symbolism for a reinvigorated nation. By now, the world can visually identify the individual structures, if not name them—Velodrome, Agora, Olympic Stadium, Plaza of Nations, Entrance Plazas, Olympic Fountain, and Cauldron.

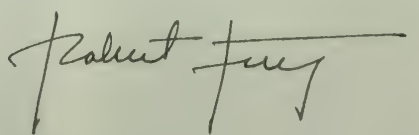
Designed by the Spanish-born architect Santiago Calatrava, the entire complex represents a unique personal achievement. Few individual architects or planners, including the 18th-century utopians Ledoux and Boullée, or the 20th-century's Piacentini at Rome's Fascist EUR, have composed and realized such a fulsome urban vision. Calatrava's program was thorough, including master planning and rethinking the existing 250-acre park, while adding major new public spaces and designing new additions to the ensemble.

Sleek, melodic, distinctly Mediterranean, these arching buildings employ familiar architectural motifs and materials to capture moment and redefine place. First and most obviously, they employ structure as a critical, visible element (not surprising for Calatrava, also a civil engineer). At the stadium, for example, the architect employed lithe, dual arches of tubular steel, which rise like a sustained tone, then drop to a single pin. The roofs, composed of translucent polycarbonate, hang suspended from cables, caught in midflight and poised as a shading device for spectators within the arena. The total effect is of controlled rapture, analogous to sport or to dance.

Other designs reveal the fourth dimension. To capture time, the architect employed pattern and repetition, forging a linked sequence of vaulted pergolas into a long semicircular walkway called the Agora. There, light and shadow flit between alternating realities, the whole animated by the rhythm of the human footstep. Other buildings undulate. Across the plaza from the Agora, a 65-foot-tall screening wall (the Nations Wall) rolls in a wavelike motion—a sculptural essay rendered lifelike through hundreds of straight metal wands, orchestrated and motile.

Critics may suggest that in an age that celebrates diversity, no single consciousness need design a site so pervasively. Some might cavil that Calatrava's palette seems obsessed with similar, highly personal themes, from the anthropomorphic to the kinetic. The long view of history, however, suggests that other great architects, from Phidias in the 5th century B.C. to our own time, have spent their lives refining an idiom. Calatrava's "researches," as he calls them, seem to be centered on the artful response of human beings to physical laws.

The fact remains that in Athens, one man's vision has changed a city and our perception of a country. Whether as visitors to the grounds or as televoyeurs, our view of Greece, formerly bounded in trabeated Classicism, has shifted positively with a new century. The redefinition is near-complete: The land that provoked Aristotle's thought on the nature of beauty receives a new definition, while the Olympic Games anoints a new kind of hero.



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Letters

Sticking with the plan

I was quite thrilled to see Chicago's new Millennium Park featured in August's Record News ["Sunday in the Park with Architecture," page 23]. But I must set the record straight regarding Skidmore, Owings & Merrill's role in the project.

SOM's "original Beaux Arts scheme" was not "mostly scrapped," as writer Sam Lubell stated. This plan formed the armature within which special feature pieces work to enhance this section of Grant Park. There are still major Beaux Arts influences at Millennium Park—fitting, given the venue is a late addition to Grant Park, itself a Beaux Arts treasure. SOM's master plan for Millennium Park evolved and remained a guiding document throughout the five-year life of the project. As the project changed and grew in scope, SOM was there to adjust and refine our master plan. But make no mistake: From the outset, the master plan called for the park's most distinctive features, including the band shell and the oval shape of the adjacent lawn; the art pieces; the outdoor ice-skating rink; the fountain; the traffic circulation system—even the reconstruction of the peristyle that once stood at what is now the north end of Millennium Park.

In addition, I was involved in fund-raising activities for Gehry's footbridge, and sat on committees involved in the selection of Gehry, artist Anish Kapoor, and park designer Kathryn Gustafson.

Millennium Park fulfills Chicago's decades-long dream to turn the long-barren 20 acres within Grant Park into a civic showplace. SOM is proud of the important role we've played in helping make the dream a reality.

Adrian D. Smith
Consulting Design Partner
Skidmore, Owings & Merrill

Proceeding boldly

My daughter was on the team of four fifth-year architecture students who, for their thesis project, not only designed and built the beautiful Antioch Baptist Church ["Samuel Mockbee," June 2004, page 184], but also worked with the 15 parishioners to build this project from the "ground up." The students also had to research and find the funds to build this very ambitious project.

As a proud parent, I would like to see these students receive the accolades due to them. They are: Gabrielle Michaud, Marion McElroy, Jared Fulton, and Bill Nauck. They, along with their families and friends, worked tirelessly over a period of 15 months to complete this awesome church, using the original pews and all the wood from the old church—the most ambitious and beautiful project yet to be completed in the Rural Studio.

Sambo Mockbee was their mentor, who sadly passed away while the church was being built. These four students did what he taught them: "Proceed and be bold."

Beverly Michaud
Huntsville, Ala.

Saluting a memorial

After reading Paula Deitz's Commentary on the World War II Memorial [August 2004, page 71], I must express my dissent. Following a recent visit to Washington, D.C., and an extensive walking tour of its landmarks, I can honestly say that no memorial could have been more fitting than Friedrich St. Florian's design.

The memorial's arches effectively serve to remind Americans of the triumph over evil, despotism, and tyranny, while with its wall of bronze stars it cautiously reminds us of the human cost of war. The memorial, more than any in a long time, also seems to be one which is truly enjoyed by all of its visitors—and, contrary to Deitz's opinion, I think that is a good thing.

Not every monument or memorial has to be a grim reminder of the past. Thankfully, this one reminds Americans of their victory. I know it would remind my grandfather of his proud service during the war. Isn't that what really matters?

Joshua W. Miller, Assoc. AIA
Architect, U.S. Air Force
Sheppard AFB, Wichita Falls, Tex.

Picture perfect

I must compliment the exceptional photography featured in ARCHITECTURAL RECORD. Particularly inspirational are Timothy Hursley's photos for the July coverage of Seattle's Central Library [Projects, page 88] and Anton Grassl's and Paul Warchol's photos for the Kendall Square article [Projects, page 102], also in the July issue. I do a lot of architectural photography and can appreciate the level of skill behind the exceptional images that are ARCHITECTURAL RECORD's hallmark. The magazine showcases a level of quality that I am always working toward. Keep up the good work and excellent articles.

Dan Reaume
LaSalle, Ontario

Thin dissonance

In Robert Campbell's report from MIT's conference on cutting-edge architecture [Critique, July 2004, page 61], his characterization of Frank Gehry and Robert Venturi as opposites seems myopic. The work of the two is in fact quite similar, as both architects seem fascinated with playful facades. Campbell himself describes Gehry's Stata Center as "deliberate metaphor," a phrase that could easily refer to any of Venturi's own work. And has anyone noticed how much the Stata resembles certain late-generation Vegas casinos—particularly New York, New York? Who is learning from Las Vegas now?

Lance Hosey, AIA
Charlottesville, Va.

Electrifying information

Barbara Knecht writes a nice article about the new mass transit stations ["Mass Transportation to Get Sleek and Daring," June 2004, page 289], but she doesn't seem to know much about trains. I quote: "Unlike a conventional steel-wheeled train, a Maglev train doesn't use fossil fuels." Almost every mass transit system, from light rail to subway to San Francisco's cable cars, runs by electricity, just like the Maglev systems. Even Amtrak, in Knecht's cities of New York and Boston, runs on electricity—mostly obtained by burning coal. Only the long-distance Amtrak trains crossing the country run on diesel fuel, mostly because the investment in electrifying a rail line with low density of use is not practical.

Albert J. Vegter, AIA
Ann Arbor, Mich.

Corrections

The July feature on architecture centers [page 81] incorrectly noted the name of the architect for the Chicago Architecture Foundation's ArchiCenter—he is Jaime Velez of SOM Chicago. Also in the July issue, one of the photographers for Kendall Square's Genzyme Building was miscredited—his name is Anton Grassl. The images that appear on page 142 of the June issue's AIA Honor Awards coverage were incorrectly credited—the photographer is Nic LeHoux. The subject's name in the August Profile [page 260] was mispelled—the correct spelling is Frances Daly Fergusson.

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National Terrazzo & Mosaic Association 2003/2004 Honor Award

Boise Airport Passenger Terminal — Boise, Idaho

Architect
CSHQA.
Boise, Idaho

Designer/Artist
Elizabeth Wolf
Boise, Idaho



Terrazzo was the flooring of choice for the Boise Airport terminal because it is durable and allows for many design possibilities. An airport terminal has a large amount of foot traffic, which necessitates a durable floor covering. The Boise Airport is owned by the City of Boise, and although public funds did not pay for the new terminal or the airport's overall expansion, the Airport Commission felt it was particularly important to show fiscal responsibility in using their funds. The higher initial installation cost of terrazzo was offset by inexpensive and easy daily maintenance. Most likely the floor will never have to be replaced.

Terrazzo's other attractive feature is its design flexibility. From the earliest conceptions the architects had pictured a floor that looked like a flowing river. The city wanted the new terminal to be a gateway to the city and surrounding area, so the terminal was designed to reflect its setting—a river valley. Wide-open spaces and expressive architectural elements (including the undulating curves reflected in the ceiling soffits and in the terrazzo flooring pattern) flow from one functional space to another in a sequential order that instinctively guides a passenger through the building.

In addition, the Airport Commission identified the circular portion of the floor under the three-story rotunda as a key focal point in the newly designed building. The artist-designed medallion image visually represents Boise and Idaho as a regional hub and provides directional orientation. In the center of the design, Idaho and contiguous sites are outlined as if on a map. The state flower, syringa, and the state bird, the mountain bluebird, are integrated into the image. Around the edge of the circle is a flowing river motif complete with fish.



National Terrazzo & Mosaic Association 2003/2004 Honor Award

DeVos Place Convention Center Grand Rapids, Michigan

Architects/Designers/Artists
Progressive AE
Grand Rapids, Michigan

Ellerbe Becket
Minneapolis, Minnesota

Grand Rapids, Michigan's newest centerpiece, DeVos Place is a magnificent $216 million facility. This new convention center had already generated more than $36 million in new business and helped cultivate a thriving entertainment district in the heart of the city. The Grand Gallery, a 28,000 square foot, skylit lobby extends from the Grand River to Monroe Avenue. Seventy-five feet high, the gallery links the major parts of the center. The ribbon or serpentine design flow of the floor is to correspond with the flow of the adjacent river and the buildings exterior design. Terrazzo was chosen because of its beauty and the test of time.

National Terrazzo & Mosaic Association 2003/2004 Honor Award

Ford Field Stadium Detroit, Michigan



Architect
Smith Group, Inc.
Detroit, Michigan

The owner and architect researched different options in flooring for the new Ford Field stadium and determined that terrazzo flooring would provide the durability, design versatility, long term maintenance and cost effectiveness needed for a high profile multi-use stadium.
The terrazzo floor is located at the main entrance of the new building, which is home to the NFL Detroit Lions. Two intricate designs of the Detroit Lion's logo and pattern were completed in less than six weeks. Ford Field stadium was specified using 3/8" epoxy terrazzo including nine colors throughout the 18,000 sq. ft area. Many of the colors contain a percentage of recycled glass and mirrored terrazzo chips. The vibrant blue of the lion was made possible by the exclusive use of blue glass and mirrored terrazzo chips.
From its commencement, the project had an aggressive schedule and unwavering completion date. The home opener for the Detroit Lions could not be changed. The project conditions presented some obstacles to overcome. The structure of the building required an expansion joint to run through the design due to the use of two different concrete slabs that were to be covered with terrazzo. A flexible colored epoxy membrane was installed that matched each adjacent terrazzo panel to provide greater aesthetic characteristics of the expansion joint. Pouring nine different colors of terrazzo and installing the logo's strip on-site did not make this floor a candidate for a fast track installation. Safety and quality, however, were never compromised under the stressful schedule.

National Terrazzo & Mosaic Association 2003/2004 Honor Award

Bethesda Academy of the Performing Arts
Bethesda, Maryland

Architect
Wood and Zapata
Boston, Massachusetts

Designer/Artist
Heidi Lippman
Smithsburg, Maryland

Washington area artist Heidi M. Lippman designed and oversaw the laying of a 4,000 square-foot terrazzo floor, called "Imagination and Discovery," in the new Imagination Stage, located in downtown Bethesda. The floor is one unique aspect of an architecturally significant building by Boston-based architects Wood + Zapata. The building—striking in both its visual beauty and its purpose—is a theatre arts center serving young people and their families.
The terrazzo material is composed of an epoxy "medium". It is 3/8" thick and a vivid blue color with a wide variety of glass and stone chips from all over the country, adding color and depth. The floor is particular in its emphasis on the quality and depth of color and texture as well as the complexity of its zinc divider strips. Lippman says designing the floor "was similar to doing a 4,000 square foot drawing. I was seeking emphasis on how truly rich this material and concept could be". That concept uses forms described by the Fibonacci sequence—an infinite set of numbers that never repeats. Through the centuries, this mathematical sequence has been discovered in the spiral growth of seashells and the complex petal formations of certain flowers and has been utilized by artists, musicians and poets to convey a perfect harmony within their works.
Lippman uses the Fibonacci sequence in the flooring of Imagination Stage to symbolize growth and development, reflecting Imagination Stage's goal of creating a place where all creativity is nurtured and all talents respected. Lippman sees her design as "a metaphor for the unique qualities of each individual as they contribute to a whole society".



PHOTOS © 2003 HEIDI LIPPMAN

National Terrazzo & Mosaic Association 2003/2004 Honor Award

JOB OF THE YEAR

The Clay Center for the Arts and Sciences
Charleston, West Virginia



PHOTOS © 2003 JAMES WEST

Architect
Calloway, Johnson, Moore West
Winston-Salem, North Carolina

The Clay Center for the Arts and Sciences houses the performing arts, visual arts and the sciences all under one roof – one of the few centers of its kind in the country. The Clay Center is one of the most ambitious economic, cultural and educational undertakings in West Virginia's history. The Clay Center will enhance the regions "quality of life" and enrich the lives of all West Virginians. The 14,500 square feet of six-color epoxy terrazzo floor energizes the lobbies and main entrances. The terrazzo pattern has swirls and bands that pulsate in many directions. At the center of every swirl is a stainless steel disc. The color and contrast between the six epoxy colors and the chips are vibrant and breathtaking.

The Clay Center required a flooring system that was durable yet could incorporate the artistic designs needed for this space. Since this building is used mainly for entertainment functions, this exciting and bold pattern stands out when people are walking on it as well as looking down from balconies. The six colors are a mixture of marble chips, plastic chips, and mother of pearl. Divider strips are 3/8″ x 1/8″ heavy top zinc angle strips; all strips were slotted and bent on the job. The main stairway has 1/2″ thick pre-cast epoxy terrazzo tread and risers.

National Terrazzo & Mosaic Association 2003/2004 Honor Award

James Edgar & Jean Jessop Hervey Point Loma Branch Library San Diego, California



Architect
Conwell Shonkwiler & Assoc.
San Diego, California

Designer/Artist
Conwell Shonkwiler & Assoc.
San Diego, California

This new branch library for San Diego's Point Loma neighborhood is the culmination of over seventeen years of community planning and design. At 26,000 square feet, it is the largest branch library in the San Diego system.

Terrazzo was the material of choice for the design and installation at the Library's central entry rotunda. The regional and historically oriented design incorporated many special design features. These include: 1) a map of the Point Loma peninsula and the adjacent areas of San Diego's harbor, Mission Bay and North Island 2) a detailed "nautical" compass inlay indicating the location of the Library on the map, which also corresponds to the exact center of the rotunda 3) a playful pod of dolphins leaping from the ocean and 4) the multi-colored inlay of a Portuguese sailing galleon intricately detailed with decks, gun ports and sail riggings.

These special design elements are all composed within divider strips that become longitude and latitude lines on the "globe" that is represented by the circular shape of the rotunda. All of these unique design features are delineated with different colors of resin and chips to create an artistic terrazzo floor mural. This popular entry design has already captured the imagination of children and adults who are welcomed as they arrive at this special Library.

Overall, the decision to use terrazzo allowed the Architects to obtain the originality and intricacy in design and detail conceived in their imaginative artistic concepts. Terrazzo also provided virtually an unlimited choice of available colors and textures within the design. Terrazzo gave the entire team a material proven for performance from the time of the romans and an exceptional value for the client. Ultimately, the resultant craftsmanship of the installers had reinforced all of the reasons for selecting terrazzo and provided the Point Loma community with a functional piece of art that will welcome them to this exemplary library for generations.

National Terrazzo & Mosaic Association 2003/2004 Honor Award

Johnstown High School Johnstown, Pennsylvania

Architect
The Hillier Group
Newark, New Jersey

This project consisted of 30,000 square feet of epoxy terrazzo and was selected because of longevity and unlimited color palette. Strips were positioned to create a distinctive angled design that started in the lobby and continued along the hallways. Six colors were chosen to emphasize the flooring pattern. The combination of custom colors, glass aggregate, and design created the illusion of more space and light. The end result was an exceptionally beautiful, distinctive looking floor.



National Terrazzo & Mosaic Association 2003/2004 Honor Award

Municipal Auditorium - Concourse Renovation — Kansas City, Missouri



Architect

Tevis-Low Architectural Group, PC
Kansas City, Missouri

How do you take a basement level passageway and turn it into a beautiful event space? That was the challenge facing architects at Tevis Low and Terrazzo installer Desco Coatings.

Located next to a very popular event venue, Kansas City's The Little Theatre, the team determined early on terrazzo was the only option for the next entertaining jewel located in part of the City's Municipal Auditorium. Desco helped perfect the modern terrazzo designs needed to compliment and enhance the art deco terrazzo throughout the rest of the building's venues.Rich colors, bold lines and attention to true art deco period terrazzo design allowed Desco Coatings to help turn a once ugly eyesore into a work of art.

Near the final installation phase, Desco invited more than 200 regional architects and interior designers to view the project. They came to appreciate the craftsmanship and skill involved by troweling up a mock-up base, grinding terrazzo samples and attending a four hour seminar explaining the art form called terrazzo…from start to finish…in all its different forms, applications and processes.

National Terrazzo & Mosaic Association 2003/2004 Honor Award

Richmond International Airport — Richmond, Virginia

Architect

Gresham Smith and Partners
Richmond, Virginia

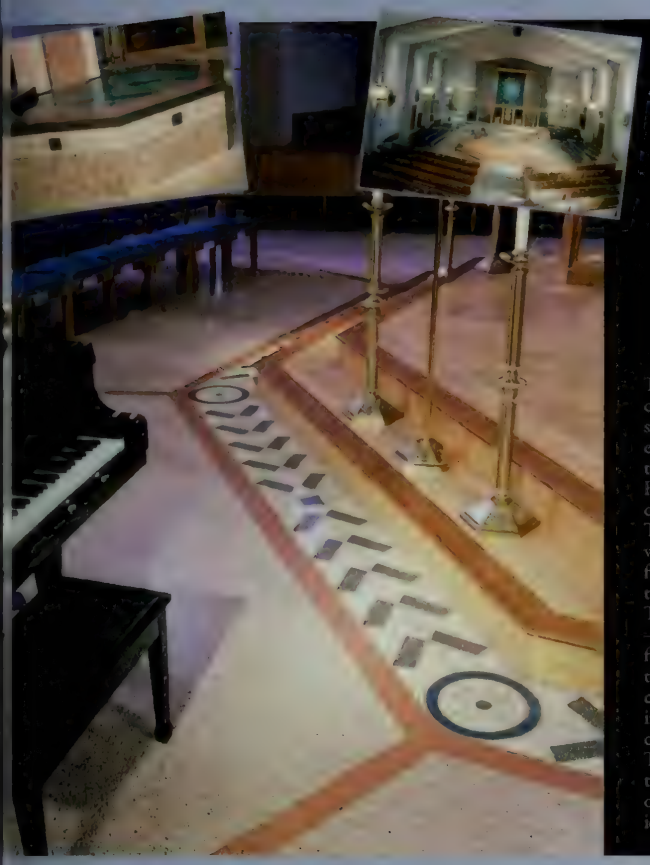
Designer/Artist

Gresham Smith and Partners
Richmond, Virginia

22,000 sq. ft. of 3/8" epoxy terrazzo is the main design element for the Concourse Expansion project at Richmond International Airport. This project was the first phase in a multi-project expansion program currently underway at Richmond. Durable floor coverings are a typical need in airports where high amounts of wheeled and foot traffic test the limits of most materials. Epoxy terrazzo was the material of choice to achieve a highly durable, low maintenance and design flexible flooring. The palette of five colors utilizes three shades of grey with brick red and navy blue accents. This palette draws from the vernacular colors of the region. Central Virginia, and Richmond itself, is rich with red brick and stone structures and numerous natural waterways from the James River to the Chesapeake Bay. The geometric patterning incorporates design elements from the existing award-winning parking garages and introduces elements of palette and pattern, which will be seen in the future phases of expansion. These elements and colors were used to create a vibrant floor pattern leading passengers through the concourse and providing markers at main decision points. Mother of pearl and glass chips provide a dressy glint and create depth within a color, and 1/4" aluminum divider strips provide a crisp outline to the geometric pattern elements.

Overall, the use of terrazzo was key to Greham Smith and Partners achieving the goal of creating a crisp, clean, and timeless flooring design with easy maintenance over a large area.





National Terrazzo & Mosaic Association 2003/2004 Honor Award

St. Catherine Catholic Church
Seattle, Washington

Architect
Veraldi Renouard Architects
Seattle, Washington

Designer/Artist
Anna Veraldi
Seattle, Washington

The intrinsic qualities of versatility and flexibility of terrazzo allowed the creation of a new radio-centric pattern around the new central altar and dais, linking the new element to the existing structure. Portions of the existing sand cushion terrazzo have been saw-cut and in-filled with epoxy/sand mortar and epoxy thin-set terrazzo mixes accented by marble elements recovered from the demolition.

From the 8 corners of the central octagonal shape of the dais and new patterned terrazzo fascia, depart terrazzo stripes that connect to the existing columns, corners and rows of pews.

The terrazzo pattern anchors the new heart of the building, which otherwise would be "floating" without connection to the surrounding elements. The brown and pink marble linear elements from the communion railing were simply sawn into 1/2"" slices and arranged in a geometrical pattern, forming the design structure, which was in-filled with 4 color epoxy terrazzo mixes.

The three principal colors of the new terrazzo echo the earthy and warm tones – pink, tan, brown – of the existing floor and marble, with aggregates that match or complement their palette. A fourth color, blue, with a high percentage of colored glass chips, accents the pattern and marks the ending points of the radial stripes, terminating with blue squares encased in a 1/2" brass border. This color replicates the existing vitreous mosaic at the front of the church, behind the original altar. Use of brass dividers defines the fields, enhancing their colors and echoing the gold details of the existing mosaic.

The new baptismal font, entirely made with marble recycled from the demolition, features a vertical fascia of pre-cast terrazzo elements, also incorporating slices of the pink marble from the stiles of the old railing, as well as blue accents and brass dividers. Inside the font, new blue glass mosaic matches the existing vitreous wall.

National Terrazzo & Mosaic Association 2003/2004 Honor Award

Spring Woods High School Houston, Texas

Architect
Ambrose, McEnany & House Architects
Houston, Texas

Designer/Artist
Ambrose, McEnany & House Architects
Houston, Texas

The architect wanted to design a unique terrazzo floor for the corridors of the athletic addition to the Spring Woods High School. A mixture of synthetic and marble chips were utilized on the project. Strips utilized were 16 gauge zinc and 1/4" black plastic. The terrazzo on this project is a sand cushion terrazzo system. Eight different terrazzo colors were utilized. All of the colors were made from cementitious materials with polyacrylate additives except the green and the red, which were epoxies. The terrazzo pattern begins with tiger stripes as you enter the hallway displaying the school colors of orange and black. As the design continues, it turns into black and white waves and a checkerboard pattern ultimately ending up with a checkered flag waving. The pattern progresses further with a criss-cross design of white and green. The area then transforms into a yellow section with orange bubbles emerging. The design continues into a piano keyboard swirling down the hallway. The design finishes in the main lobby with the Texas flag blowing in the wind. The red epoxy appears to be shaded in areas. This was achieved by using different chips in different areas of the red to simulate a flag being shaded as it is blown in the wind.



PHOTOS © MARK DEAN

National Terrazzo & Mosaic Association 2003/2004 Honor Award

Bel Air Residence Los Angeles, California

Special Award





Architect
Charles Allem Design
Los Angeles, California

The project has a modern design, which utilizes a lot of glass, stainless steel, smooth plaster and terrazzo. They are all monolithic surfaces.

Terrazzo was used on the exterior for all hardscape surfaces including decks, stairs, planter walls and copings, pool coping, benches, pool bar and wall, and perimeter curbs for glass rails. Custom slot drains were fabricated and placed in the deck to eliminate visibility of the drains. All stairs were poured-in-place to accommodate job site field dimensions.





National Terrazzo & Mosaic Association 2003/2004 Honor Award

Strom Thurmond Wellness Center Columbia, South Carolina

Architect
The Boudreaux Group
Columbia, South Carolina

Designer/Artist
Scott Garvin
Columbia, South Carolina

The University of South Carolina wanted every aspect of the new Strom Thurmond Wellness Center to exude high quality and timelessness. In response, the owner and design team emphasized the use of "real" materials in the 190,000 sq. ft. state-of-the-art recreation facility. With thousands of students projected to use the facility each day, terrazzo emerged as the best choice for the expansive common space.

The new recreation center is designed primarily for use by the general student population. Therefore, the owner's desire was for the interior color scheme to have its' own unique feeling, separate and distinct from University athletics. A palette of nine terrazzo colors was developed, based on the inherent "natural" selections from several of the main venues: charcoal grays, recalling the rock of the three-story climbing wall; warm neutrals, from the building's brick and concrete structural frame; deep reds, reminiscent of the site; watery blues, from the natatorium an adjacent outdoor pool. Tonal variations on the theme were selected to work in harmony with the building's ground face cmu, translucent skylights, maple flooring, and stainless steel details.

The floor at the main entry presents the focal point of the building. Beneath an oculus within the skylight-domed rotunda, rests a three-dimensionally-rendered compass rose incorporating all nine terrazzo colors. The compass design reaches outward with radial accents and radiating bands that stretch toward each of the three main entryways.

A three-story gallery space marks the central axis of the complex, creating a meeting and circulation spine for student interaction. Two-toned buff and gray diamond-patterned terrazzo with black accents occupy the main portions of floor, and carnelian red fields bordered by black and white bands delineate the structural bays. Finally, amidst a myriad of secondary corridors and residual spaces, each delineated with its own unique terrazzo field, the secondary entry area is punctuated with a 20-foot diameter circle and star pattern, recalling once again the rotunda's prominent theme.





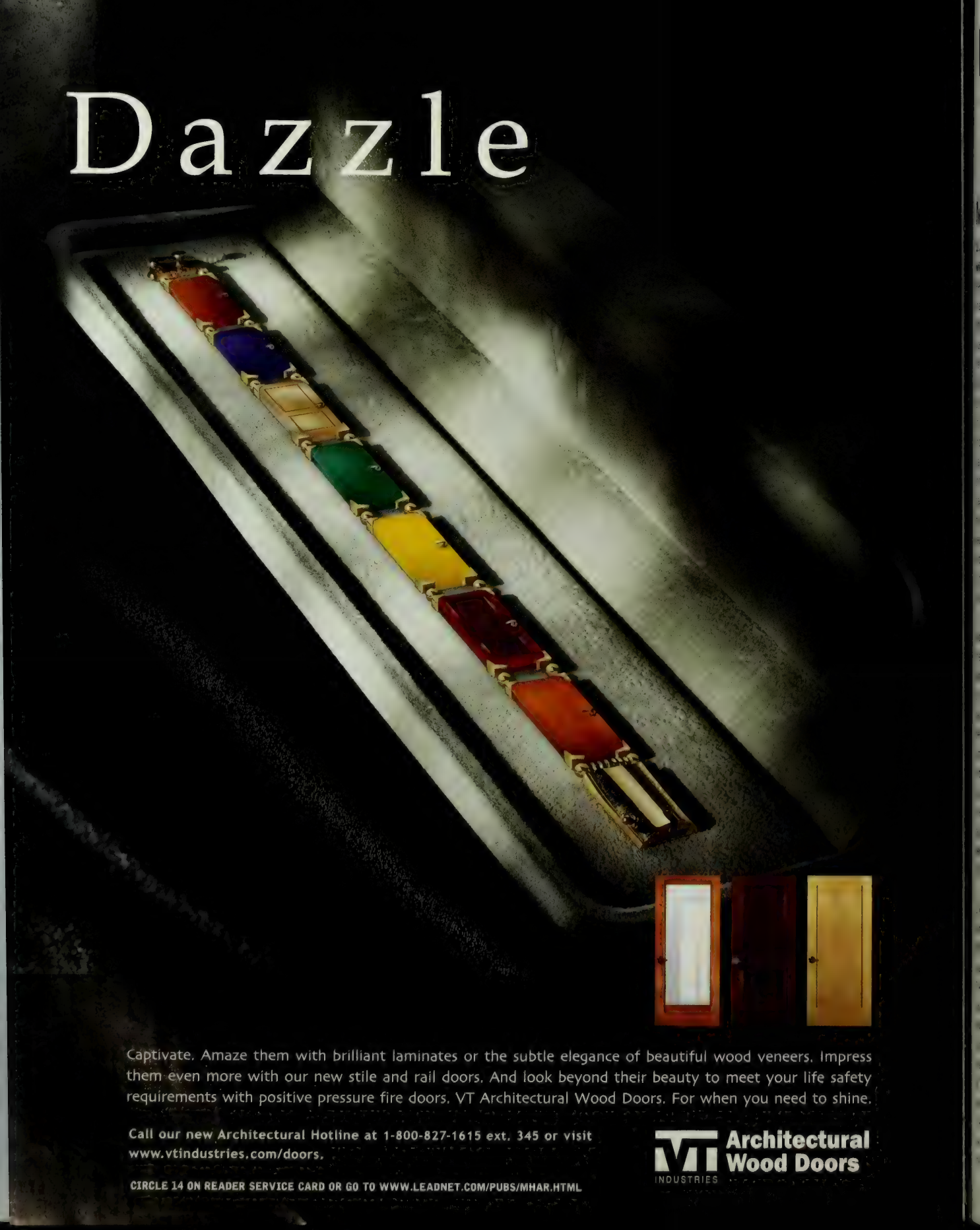
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Record News

Highlights Grand Avenue project in L.A. gets under way p. 28
Report assails Scottish Parliament project p. 34
High schools on the boards p. 38
Special section: Ground Zero three years later p. 46

Major world projects facing uncertain future

U.K.'s "Cloud" and "Spiral" will likely be canceled

Responding to austerity measures that reflect worldwide economic conditions, two vaunted architectural icons planned in the U.K. appear to have bit the dust in late July. First, Will Alsop's Cloud, the centerpiece of Liverpool's year as European Capital of Culture in 2008, was deemed "no longer viable" by the government partners leading the scheme. Costs of the mixed-use waterfront scheme had risen from an estimated $420 million in 2003 to $595 million. This year, a major cost increase in the proposed residential element of the scheme was deemed problematic, challenging its viability.

The Cloud was intended to capture in a contemporary language the grand spirit of three other historic waterfront buildings, the Liver, Cunard, and Port of Liverpool, and be a "Fourth Grace." Its exuberant design, centered around an almost unfathomably complex, amorphous 3-tier structure, was described by a local as a "diamond knuckleduster." In spite of English Heritage support, its lack of a resolved program hampered both public acceptance and a full go-ahead by the planners.

Meanwhile, in London, Daniel Libeskind's Spiral extension to the Victoria & Albert Museum (V&A) failed to receive a $28 million Lottery grant toward its $129 million budget. The scheme, first unveiled in 1996, would extend the museum's gallery and education space for contemporary arts and design. The building plan included walls rising in a series of inclined planes to form a self-supporting spiral. Its exterior was to have been clad in hand-crafted tiles. Some critics felt the museum should focus more on existing facilities than on such a grand gesture. The Spiral got the green light from the local council and the Royal Fine Arts Commission in 1998. This is the second time the building has failed to win a Lottery grant, and V&A trustees acknowledged that the future of the scheme was now "seriously jeopardized."

While the decision will not affect the V&A's wider future plans, including new $46 million Medieval and Renaissance galleries, it likely sounds the death knell for yet another cultural landmark building proposal. While Britain enjoyed the largesse of the Lottery at its height in the mid-1990s, it now appears that major buildings requiring funding need a design encapsulating an equally powerful sense of purpose to be deemed viable. *Lucy Bullivant*



The fate of Libeskind's Spiral in London (left) and Alsop's Cloud in Liverpool (right) is uncertain.

Beijing Olympic Stadium project halted

Construction for the signature project of the 2008 Beijing Olympics, a stadium designed by Swiss architects Herzog & de Meuron with engineer Arup, has been halted. "The construction of the national stadium has been suspended temporarily," says Diana Dai, a spokeswoman for BOCOG, the agency administrating the games. The project has fallen victim to budget and feasibility concerns, or as Dai puts it, "The idea of hosting a 'prudent' Olympic Games is the main reason for the changes."

A report posted on August 13 by Xinhua, the state news agency, noted, "Construction experts claim that the plan will be difficult to realize and is expected to consume a massive 50,000 tons of iron and steel." The stadium was to be clad in a weblike series of huge steel beams that undulate to create what many call a vast "bird's nest." It was to have 80,000 seats at an estimated cost exceeding a half-billion dollars.

Olympic organizers say the stadium project has not been shelved entirely and that a revised program will soon be announced. The new scheme will be much more modest. The Olympic organizing committee hopes to tone down the scale and expense of the Olympic plans, which have been markedly ambitious. This is in line with a recent change in Chinese government policy that aims to cool down the country's substantial building spree.



Herzog & de Meuron's Beijing Olympic Stadium (above) will be scaled down.

Still, Office for Metropolitan Architecture's (OMA) huge CCTV headquarters, recently rumored canceled, seems to have escaped the new austerity moves. The broadcast center would be OMA's largest built work to date and will cost an estimated $730 million. Besides traffic impact adjustments, "there are absolutely no changes," says Ole Scheeren, the project leader and one of OMA's four partners. *Daniel Elsea*

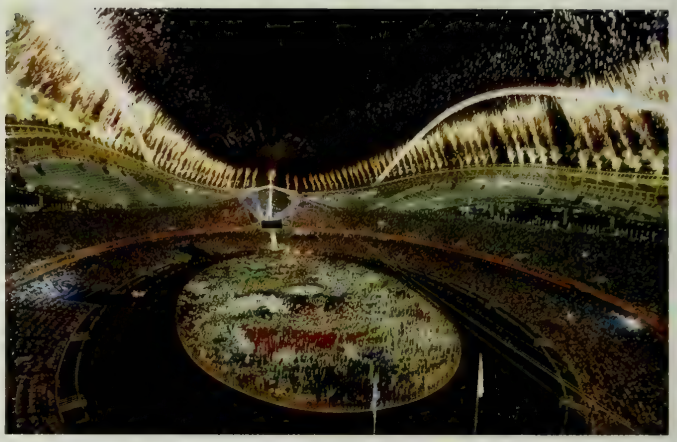
Architecture takes center stage at Athens Olympics

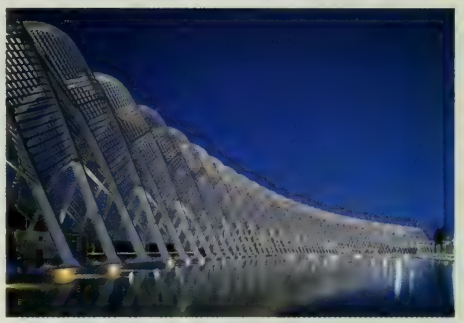
The Athens Olympics' opening ceremonies on August 13 included 72,000 spectators, athletes from more than 200 countries, performers dressed as centaurs and Greek sculptures, and numerous heads of state. But they all shared the stage with what was perhaps the show's main attraction: Santiago Calatrava's Olympic Stadium roof.

The soaring, arched covering, built over a renovated stadium, consists of two leaf-shaped, 9-ton steel wings fitted with tinted glass. The Spanish architect designed much of the Olympic Sports Complex—dominated by bright white marble, concrete, and tile—including the slender Olympic Cauldron; the Agora, a concourse covered with an elegant steel-framed covering; the Olympic Velodrome, designed with roof wings similar to the stadium's; and the Nations Wall, consisting of more than 1,000 moving steel beams.

While delays pushed construction on many of the games' structures to the last minute, all were completed in time, although much landscaping remained to be done.

The price tag for the games, which includes significant infrastructure improvements in Athens and surrounding areas, reached more than $7 billion. Security costs exceeded $1 billion. *S.L.*





Santiago Calatrava's Olympic Stadium (top) aglow in light, color, and fireworks for the 2004 Olympic opening ceremonies on August 13. Calatrava designed several other structures, including the Agora, an elegant covered walkway (left).

After long search, Columbia names architecture dean

Following an extensive search, Columbia University's Graduate School of Architecture, Planning and Preservation has named Mark Wigley its new dean.



Mark Wigley

Interim dean of the school since September 2003, Wigley succeeds Bernard Tschumi, who held the post for 15 years and remains on the faculty. The far-reaching candidate list included recent Pritzker winner Zaha Hadid and Beijing-based architect and teacher Yung Ho Chang.

Wigley has served as guest curator for exhibitions at institutions such as the Museum of Modern Art and The Drawing Center in New York. He is the author of numerous books, including *Constant's New Babylon: The Hyper-Architecture of Desire* (1998). Before joining Columbia in 2000 as director of advanced studios, Wigley taught at Princeton, where he was director of graduate studies in architecture.

Columbia president Lee Bollinger notes that Wigley is especially well-suited to the task of interweaving disciplines and departments at the school. This is a job Wigley takes seriously, alluding to the school as an "interdisciplinary think tank" that continually challenges the profession. Most important in this effort, he says, are the students: "They come wanting to change the way the profession thinks, and we learn from them and try to help them try to redefine architecture." *S.L.*

Team chosen to develop and design Grand Avenue in Los Angeles

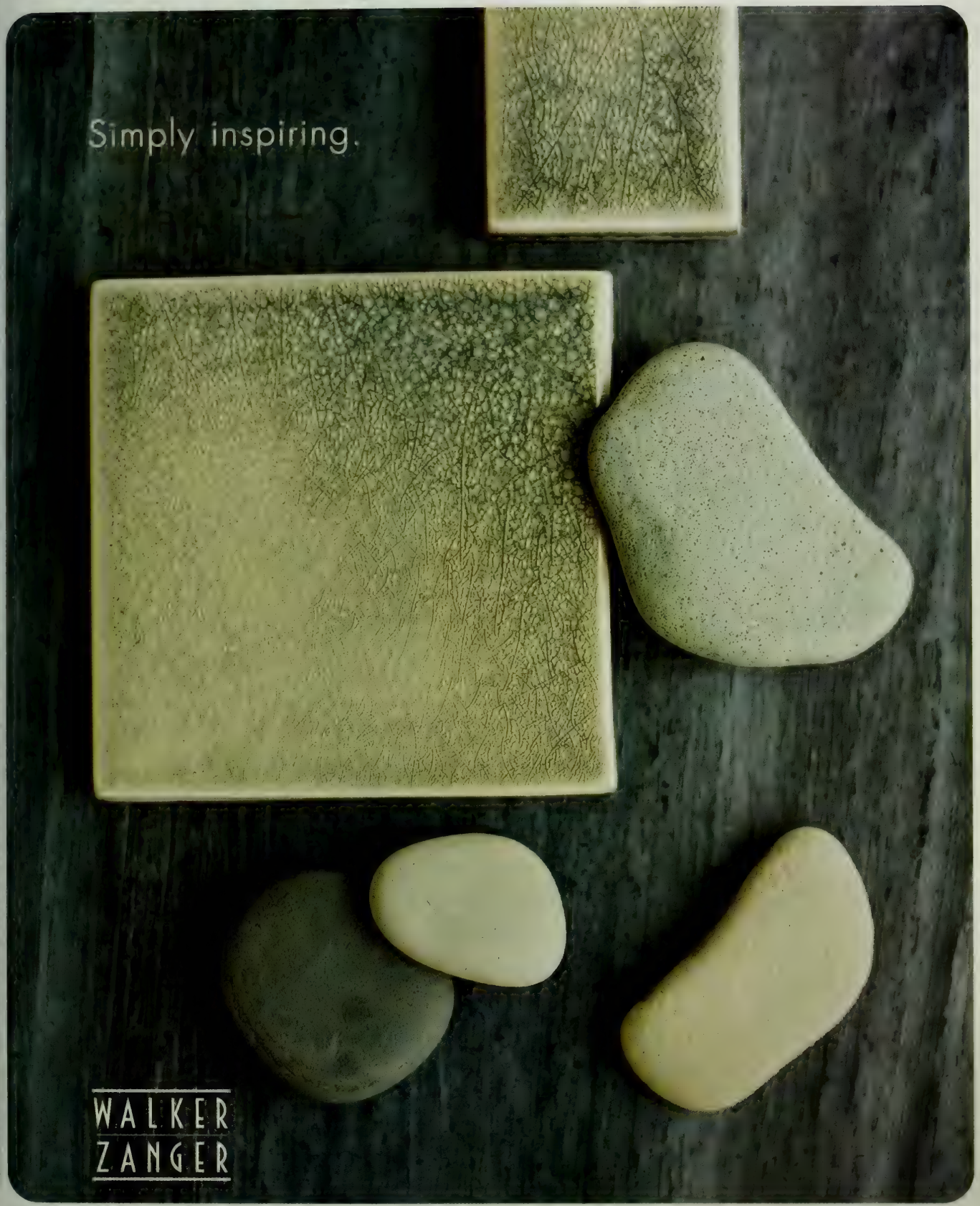
In early August, the Los Angeles Grand Avenue Authority awarded the Manhattan-based Related Companies an "exclusive right to negotiate" agreement for the much anticipated Grand Avenue housing and retail development in downtown Los Angeles.

The decision came after several months of discussion with Related, which recently completed the Time Warner Center in New York, and runner-up Forest City Enterprises of Cleveland. The development may include up to the 3.2 million square feet on and around the street, which is lined by commercial high-rises and cultural landmarks such as the new Disney Concert Hall, the Museum of Contemporary Art, and the Dorothy Chandler Pavilion. In addition, civic leaders want to create a park on 16 acres of underused land that connects Grand Avenue to City Hall, envisioning a central location for civic events, cultural gatherings, and outdoor performances.

Related's large design team includes John C. Cushman III; MacFarlane Partners; Skidmore, Owings & Merrill; Morphosis; Elkus/Manfredi Architects; Gustafson Guthrie Nichol; Levin & Associates; Suisman Urban Design; Biederman Redevelopment Ventures; Richard Koshalek; Lee Andrews Group; Merry Norris Contemporary Art; Polis Builders; Saybrook Capital; and Manatt, Phelps & Phillips.

"There is a huge amount to work with, and an opportunity to put together a cultural core that could change the urban typology of downtown," says Thom Mayne of Morphosis, who notes that design hasn't begun, but plans to have his first meeting with David Childs of SOM in early September.

According to Jan Perry, vice chair of the Grand Avenue Authority, public input on design and planning will be solicited through community outreach programs. *Allison Milionis*



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Tension between architects and interior designers over titles

Recent efforts by interior designers to grant professional titles to qualified practitioners have upset some in the architecture business.

The so-called "title" initiatives, meant to ensure that designers have proper qualifications before receiving the title "Interior Designer," have already passed in 17 states and have been proposed in several more.

"It's protecting the consumer," notes Anita Baltimore, president-elect of the American Society of Interior Designers. "They need to know they are getting a professional who has passed minimum standards."

But the efforts have met with some consternation from AIA officials, who worry that the title measures may lead to confusion about designers' duties or spawn "practice acts," granting professional (not just title) status to interior designers. Practice acts, they say, could mistakenly infringe on architects' roles, leaving interior designers with the ability to, for instance, review building plans, which they fear could threaten the safety and welfare of clients.

"In the built environment, architects are seen as guardians of the public. Until another profession meets training and qualification criteria equivalent to architecture's minimum standards for responsibility, we don't think it's a good idea," comments Paul Mendelsohn, senior director of state and local affairs for the AIA. "We're worried these acts might be misconstrued by clients," adds Peter Arsenault, AIA, president of the AIA New York State Chapter. "If interior designers want to design an office and approve construction documents, that's another story altogether."

Mendelsohn adds that three of the five states to pass title acts (Florida, Alabama, and Louisiana) have approved subsequent practice acts, which he says further muddy the line between architects and interior designers. "There's a trend nationwide of getting a foot in the door with a title act and then making it a full practice act," he says.

Architects also worry that the legislation's "grandfathering" clauses, which grant title status to those who have practiced for specific amounts of time, regardless of exam results, may certify individuals without proper training. Finally, Arsenault says a number of firms are worried about interior designers "diluting" their field, taking away certain roles or even entire projects.

Baltimore responds that "grandfathering" clauses for architects were much more lenient when architecture was developing in the early 20th century. Meanwhile, she says that title acts don't always follow practice acts, most interior designers have no interest in performing duties outside of their domain, and practice acts would increase clients' security by imposing standardized punishment against professionals who overstepped their bounds.

"I think their fears are not warranted," Baltimore sums up. "I think in the collaborative world of the future, it would behoove everyone to work together as a team and do the best that they can for the clients." *S.L.*

Construction numbers improve in first half of 2004

The construction industry continued its strong performance during the first half of 2004. New construction starts as reported by McGraw-Hill Construction Dodge advanced 10 percent compared to the same period a year ago. Much of the upward push came from single-family housing, which advanced 21 percent in dollar terms and continues to be the mainstay for the construction industry. Nonresidential building was down 1 percent from a year ago, but patterns suggest that it is beginning to turn the corner. Hotel construction was up 8 percent, while store construction stayed steady in the first half, maintaining improved levels established by the growing volume of outdoor mall and "lifestyle center" projects. Office construction was down 5 percent in the first half, but this was a much gentler decline than during the prior three years. Its lengthy decline finally appears to be reaching an end, and it is expected that 2004 will see modest growth. School construction continues to slip back, retreating 4 percent in the first half of 2004, affected especially by the weak (but slowly improving) fiscal position of states and local governments. First half 2004 also featured these gains: churches, up 1 percent; public buildings, up 7 percent; health-care facilities, up 8 percent; and social/recreational facilities, up 16 percent. ***Robert Murray, Chief Economist, McGraw-Hill Construction***



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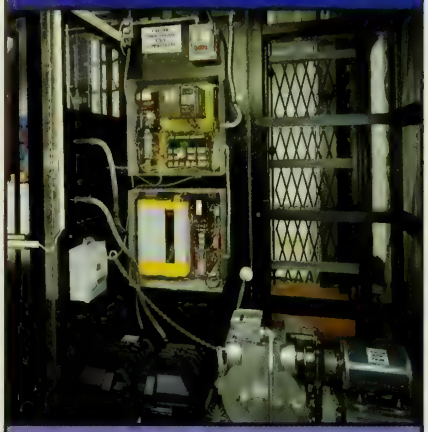
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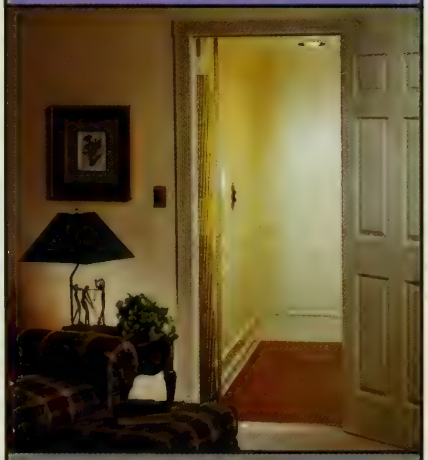
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New Miami living: Apartments mimic boutique hotels

Call it Manhattan South. Clusters of residential towers are rising up to fill in Miami's snaggle-toothed skyline. But these luxury condominiums more closely resemble full-service boutique hotels than domestic dwellings. Projects like Ten Museum Park, Bellini Bal Harbor, Cabana, and a host of others feature metropolitan amenities like valet service, spa service, and state-of-the-art technologies in the comfort of your own condo.

"Hotels have always tried to mimic high-end residences," says Daun St. Amand, an architect with RTKL Associates. "Now residences are trying to mimic high-end hotels. Condominium developers keep upping the ante on residential amenities."

Apartment towers with beauty salons, scaled-down grocery stores, and concierge services offer time-saving conveniences often found only in hotels. Condo owners, who run the gamut from successful young executives to wealthy empty nesters, subscribe to the theory that time is money and convenience is worth the cost.

In designing the structures, Miami architects are taking a page out of the design books of popular area boutique hotels like the Mandarin Oriental Miami, a slim, 20-story hotel with a curved face and Asian theme; Lowes Miami Beach Hotel, an 18-floor building with a modern Art Deco flare; and the 31-story Trump Sonesta Beach Resort, with its stunning use of exterior glass and staggered building structure.

While boutique apartment towers are springing up in New York, Atlanta, Dallas, and Las Vegas, observers point to Miami as the mother of the trend, which was born of necessity: A state-drawn boundary line to protect the Everglades National Park has halted western growth. And the ocean, bay, and rivers crossing through Dade County limit available land. The only place to go, says Charles Sieger, FAIA, principal of Sieger Suarez Architectural Partnership, is up. Sieger's firm has designed skyscraper residential properties like Portofino Tower, the Trump Ocean Grande, and now the Cabana, a 10-story private beach retreat on the Atlantic Ocean.



The Cabana: apartment building or boutique hotel?

Cabana features 210 luxury studios appointed with items like plasma screen TVs, surround sound, SmartBox technology (controlling lighting, temperature, and other functions), and fine furnishings. The building also offers a restaurant, a spa, and an infinity edge oceanfront pool. "In Manhattan you can enjoy plenty of amenities, but you have to leave your building and walk to them," Sieger says. "In Miami's suburban structure, once you leave your building, you have to drive. Having the amenities encased on the property is more convenient." Just up Ocean Drive a few miles, Bellini Bal Harbor, a 24-story boutique condo has only four residences on each floor. Amenities include a 24-hour concierge, valet, heated oceanfront pool, a spa, fitness and beauty centers, and a café.





Contemporary rooms and furniture at Ten Museum Park (above) mimic hotels lining Miami's South Beach.

Architect Chad Oppenheim, AIA, says it's all about the lifestyle. The design of his 50-story Ten Museum Park plays off Miami's tropical climate and provides a splash of European flavor. The 50-story tower features on-site a Clinique La Prairie of Montreux, Switzerland, a wellness center, high-tech fitness equipment, and two skygardens.

"Miami is the zenith for residential lifestyle experiences as developers work to differentiate themselves with cutting-edge design, creative amenities, and hype, hype, hype," Oppenheim says. *Jennifer LeClaire*



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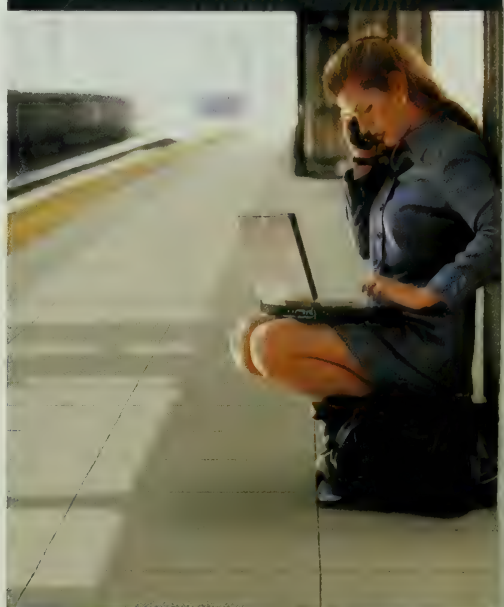
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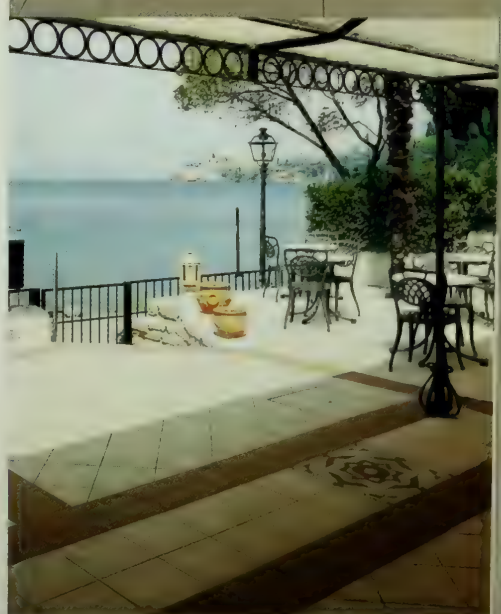
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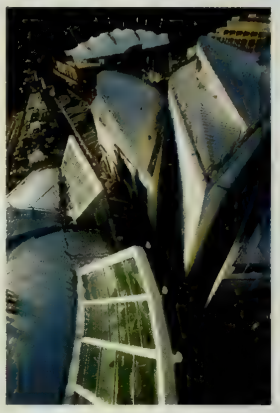
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Report cites poor management at Scottish Parliament project

Inappropriate management and change orders at Scotland's new parliament project in Edinburgh, scheduled for completion in about three months, contributed to a 20-month delay and a 122 percent cost hike, according to a recent report by the Scottish auditor general.

Planned by the U.K. government, the 350,000 square feet of offices and chambers are spread in linked, four-to-six-story buildings with a dominant boat shape and stainless-steel roofs. In 1998, the target cost was $100 million-plus, and the summer of 2001 was the target completion date.



Miralles's structure from above.

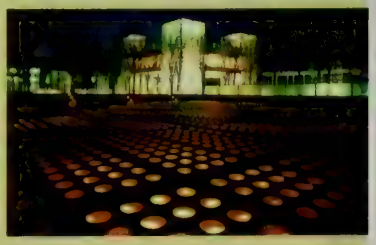
Early cost hikes and delays followed big square-footage increases as the building's use became better defined. Since mid-2000, a year after construction began, the scope of work has remained largely unchanged, notes Robert Black, the auditor general. Yet cost estimates rose from $260 million to $570 million as design continued.

"Design development became a process of [measuring the cost of] a developing design rather than developing the design within a cost," notes the auditor. In 1998, the government hired a joint-venture architect, EMBT Arquitectes, Barcelona, and the local RMJM. The flamboyant design was credited largely to EMBT's charismatic principal Enric Miralles, who died four years ago. In 1999, the parliament hired Bovis Lend Lease (Scotland) as construction manager. That was a mistake, claims Black.

"Construction management is unsuited for most building projects in the public sector," he maintains, because the approach leaves the owner with almost all of the risk. As the price ballooned, cost-linked fees rose from $42 million to a forecasted $92 million, according to the auditor. Black's report is refuted by Brian Monteith, head of the parliament's audit committee. He alleges flawed analysis and factual errors. A larger report, ordered last year by the Scottish Executive, is due out in September. *Peter Reina*

Walker cleans up at ASLA awards





In mid-July, the American Society of Landscape Architects selected the winners of its annual Professional Awards. The nine-member jury selected 33 winning projects from more than 550 entries.

Copious honors went to California-based Peter Walker & Partners, whose founding principal, Peter Walker, had taken home the ASLA Medal, the Society's highest honor, in June. The firm won an Award of Honor for the Nasher Sculpture Center in Dallas, Texas (top right), a breathtaking garden that elegantly incorporates Raymund Nasher's many sculptures, a stone terrace, large trees, and reflecting pools and fountains, sited next to a pavilion by Renzo Piano. The firm also received a Merit Award for its work at the modern yet spiritual Saitama Plaza (bottom right) in Saitama, Japan. Philadelphia firm Wallace Roberts & Todd won a Prize for Analysis and Planning for the Anacostia River Parks Target Area Plan & Riverwalk Design Guidelines in Washington, D.C. The land-use plan centers around copious greenspace and developing a common formal language through unique areas. Other winners included Ken Smith Landscape Architect, New York, for the Lever House Landscape Restoration project in Manhattan, which returns crispness and clarity to the well-known urban garden. The awards will be presented during the ASLA Annual Meeting, October 29–November 2, in Salt Lake City. For the list of award winners, go to www.asla.org. S.L.

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Privately funded monorail adds urbanity to Sin City

Whether your next trip to Las Vegas is to attend next year's AIA convention or to play the slots, getting around will be easier with the opening of the new, privately developed Las Vegas Monorail. The 4-mile line connects the Las Vegas convention center with more than 25 casinos along the Vegas Strip.

The $650 million line was entirely privately financed. "Two major resort companies wanted to increase mobility along the corridor," says Jim Gibson, C.E.O. of the Las Vegas Monorail, a private, nonprofit corporation. "That's what really got the ball rolling."

The speedy line, which opened on July 15, takes 14 minutes to go from end to end. Las Vegas, like Houston, which recently christened a new light-rail line, is not a city traditionally associated with transit, but as it has boomed, so have big-city problems like air pollution and traffic. Gibson sees the monorail as part of a larger regional transportation system that will eventually include light-rail lines to outlying areas for commuters. Two extensions are already in the works—the first, to Freemont Street in the downtown area, and the second, to the airport—though both pieces will involve both public and private funds.

Still, economics have been the driving force behind this first segment. "There has been tremendous interest in the opening of the line from convention promoters," Gibson says. And if the technology makes you think of Disney World, you're onto something. "It's the same technology," Gibson says, "and most people have a very positive impression of this kind of transit because of Disney World."



The public monorail was funded by private sources.

Gensler designed the system's seven stations in a simple palette of glass, steel, and concrete. "The stations are a family; each one is different but comes from the same kit of parts," says J.F. Finn, the project's lead designer. "We resisted engaging with the iconography of the city; instead, we want the system to be the thread that connects the city's icons." Built over the parking lots, alleys, and streets behind the resort properties, investors hope the line will encourage development in these previously underused areas while preserving the sight lines and spectacles of the Strip. *Alan G. Brake*

Architects (and their money) to the rescue at Venice Biennale

While the U.S. Pavilion at the 2005 Venice Art Biennale faces funding problems, this year's U.S. Pavilion at the Architecture Biennale will launch on September 12, thanks to an extra helping hand from an unusual source: architects. A number of established firms have pitched in up to $10,000 each to supplement corporate sponsorships and ensure that the U.S. Pavilion's exhibition, *Transcending Type*, which features vanguard firms creating new forms for traditional American building types, moves forward. Contributing firms include Beyer Blinder Belle, Fox & Fowle, Gensler, Kaplan McLaughlin Diaz, Kohn Pedersen Fox, Murphy/Jahn, Pei Cobb Freed & Partners, Cesar Pelli & Associates, Perkins Eastman Architects, and NBBJ. "This mentoring idea was really a stroke of genius," says Brian Sexton, State Department Special Coordinator for Culture, who admires the architects' camaraderie. Next year's art pavilion was hurt when the Pew Charitable Trusts and Rockefeller Foundation discontinued funding (about $300,000) this winter, and the National Endowment for the Arts recently abandoned its role in artist selection. The State Department is now soliciting curators, who will have to raise funds to supplement the government's $170,000 contribution. The show will still go on, says Sexton, and a team will likely be chosen by the end of the summer. *S.L.*



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Record News On the Boards: Schools

U.S. school design remains woefully inadequate, and trends point to more utilitarian, boxy megastructures and unimaginative floor plans. Yet some architects are planning spaces that combine new ideas with sophisticated form and layout while heeding the need to foster student learning and well-being. Some schools act as community centers and others teach lessons through their form. School design competitions are helping the cause. While most municipalities rely on clandestine measures like RFP's to pick designs, competitions encourage community input and stimulate new ideas from a wide range of talent. S.L.



Not your father's high school: Coop Himmelb(l)au in L.A.

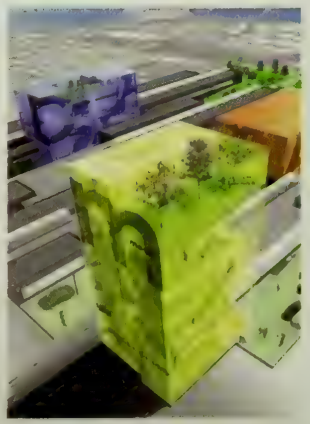
Grand Avenue—Los Angeles's designated "cultural corridor"—is poised for its next leap forward after Disney Hall with the impending new High School for the Visual and Performing Arts, or High School #9, designed by Vienna-based Coop Himmelb(l)au. The $71 million project, expected to serve 1,500 students, will form the capstone at the northern end of the avenue. The school is comprised of four distinct academies—music, dance, visual art, and theater. Each academy has a building dedicated to its use, with studios and regular classrooms sharing space. A fifth building, the gymnasium, completes the campus perimeter, while the library, in the form of a canted, truncated cone, rises symbolically at the campus center.

The Grand Avenue facade contains a large outdoor plaza and staircase that is the so-called "Public Entrance" to the campus. To the right of the entrance is a glass-and-steel lobby leading to a theater topped by a tall tower. An extension of the 1,000-seat theater's fly loft, the tower is encircled by a spiral ramp and topped by a 3,500-square-foot exhibition/conference space. The firm expects ground breaking to occur by the end of 2004, with first classes to be held in September 2006. *David Maurer*

Ronan's design will alter a town, not just a school

In an architectural "upset," Chicago-based John Ronan, AIA, recently defeated entrants like Peter Eisenman, FAIA, and Thom Mayne, AIA, to win a two-stage competition to design a striking new high school in Perth Amboy, New Jersey.

The resulting 471,436-square-foot complex will be a "hybrid" institution, functioning as both a school and a civic cultural center. The design includes a "mat," the natural and constructed landscape; a "barscape," made up of long, interconnected, rectilinear volumes housing the academic programs; and glass "towers," which rise above the site and host communal programs such as an auditorium, a media center, and dining facilities. The colorful towers are glazed in patterned and tinted layers, identifying the activities contained within and serving as visual links to the community.



The $84 million school's design, says Ronan, focuses not only on visual drama, new materials, lightness, and flexibility, but on effective learning. Small, expandable spaces known as "bars" act as intimate common areas for interaction, while classrooms draw maximum daylight and ventilation through large, operable windows on two sides. The towers will serve, Ronan points out, as a visual beacon to encourage community interaction. "This is the center of the community for this town," says Ronan.

The total complex will accommodate 3,000 students on a 15-acre site. Jury members included Henry Cobb, FAIA, Carlos Jimenez, and Toshiko Mori. Meanwhile, the New Jersey Department of Education is organizing another open competition for the renovation and expansion of the Robbins Elementary School in Trenton, New Jersey. The competition will be launched in September. *S.L.*



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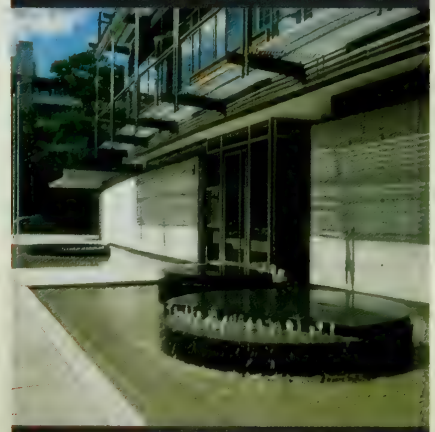
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Arquitectonica's school is a learning tool in itself



Miami-based Arquitectonica is designing a High School for Architecture and Urban Planning in Ozone Park, Queens, New York.

The unique design of the $70 million, 155,000-square-foot campus demonstrates the firm's trademark flair for pastel colors and nonlinear forms, but it also serves, notes firm principal Bernardo Fort-Brescia, FAIA, as a learning model in itself. For instance, facade materials indicate internal functions. The classroom wing is designed with traditional brick, while other areas are far less orthodox: The library is covered with flat metal, the design studios are clad with corrugated metal, and the gymnasium is covered with glass block.

Testing the boundaries of New York's Department of Education's strict design rules, the firm took some liberties. To circumvent minimal lobby space allocation, the firm combined the jury room and the lobby into an open, light-filled area. The courtyard became an extension of the design studios, combining interior and exterior spaces.

The school will be the first constructed under New York's new school construction process, which merges the School Construction Authority into the Department of Education. *S.L.*

Predock's "Science Canyon" embraces local land forms



Albuquerque-based Antoine Predock, FAIA, recently won a competition for the design of a new K-12 school in Colorado Springs. "Science Canyon," as Predock calls the project, proposes a "site of learning," where hands-on observatories and mathematical and scientific references emerge at many levels.

Located in the state's high plains, siting and topography were of utmost importance to the design. "The scheme represents a journey from the high mesa of the site to a wetland at the other end. This journey takes students, staff, and visitors from the theater, gymnasium, and administrative offices on the south of the site to an amphitheater and playing fields to the east, past gardens, a fish hatchery, and a riparian habitat to the west. "As [they] travel through Science Canyon," Predock explains, "science lessons turn up at every corner. They are even embedded in the walls: The Fibonacci number series defines the [tile] pattern in one plaza."

Building materials include concrete masonry, metal, and glass, designed and oriented to respond to seasonal climates. Courtyards are planted with deciduous trees, and in the "Ice Court," students will measure snow accumulation and study drift patterns. Completion is scheduled for June 2007. *Audrey Beaton*

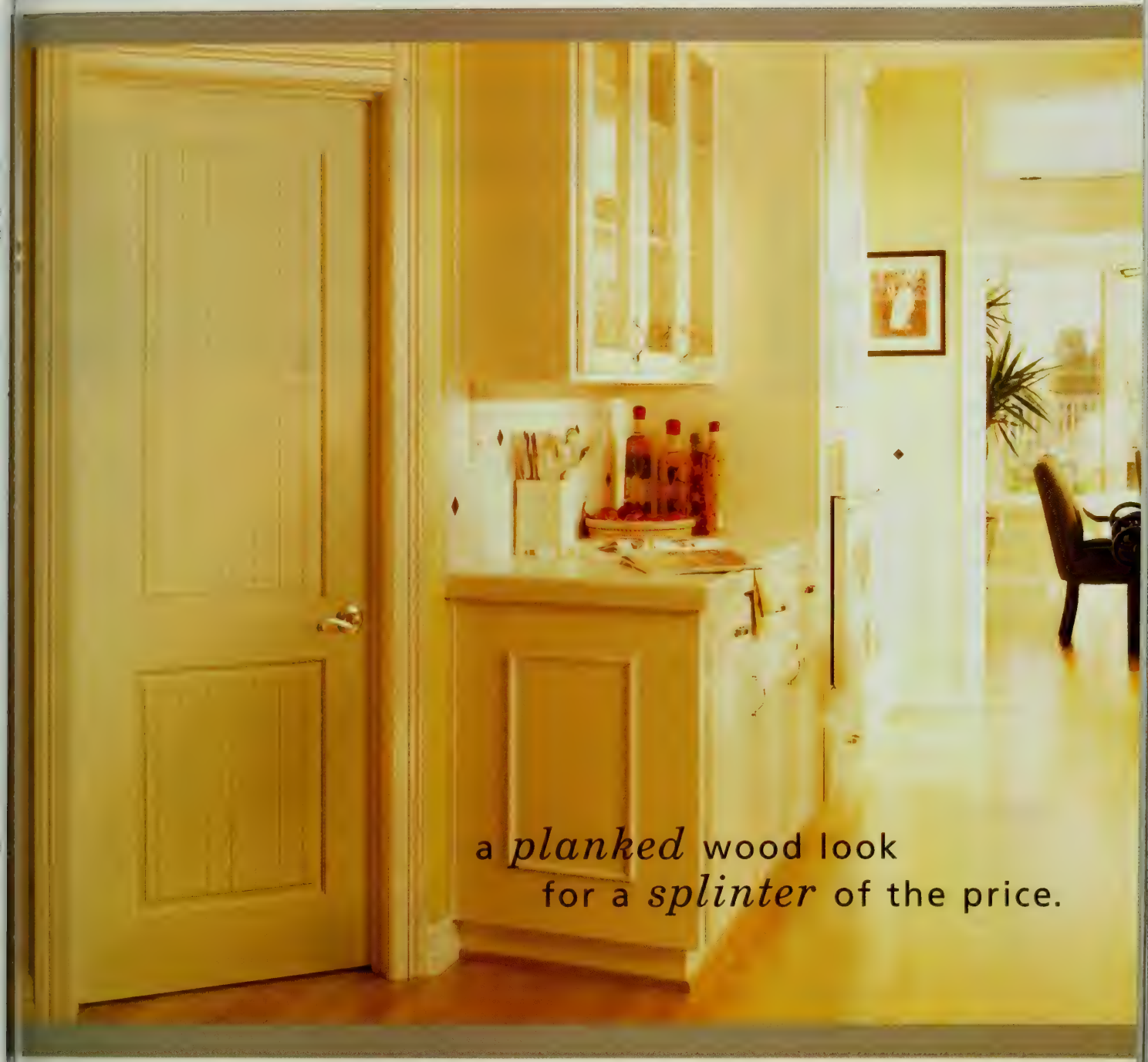
Johnson Fain blurs inside and outside



Johnson Fain and Partners is designing the Central Los Angeles Area High School #10, located on a 20-acre site in the Crown Hill District, outside they city's downtown.

The 231,000-square-foot school, arranged in a quadrangle plan, is intended to accommodate 1,700 students. The firm divided the large site into two pieces on either side of 3rd Street. An auditorium, cafeteria, and administration building open onto a "town square," or outdoor meeting space, while classroom wings and a library extend into a landscaped academic garden. A sleek steel pedestrian bridge connects the two campuses.

All corridors are open-air, and mechanical and electrical systems are exposed. Scott Johnson, FAIA, explains that the buildings, made mostly of metal panels and poured-in-place concrete, form an "urban wall," providing security and intimacy. The school is part of a state initiative that includes the construction of 55 schools. It is scheduled for completion in September 2005. *A.B.*



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lectures


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September 7
The Rebuilding of Lower Manhattan
Paul Goldberger, dean of the Parsons School of Design, architecture critic for *The New Yorker*

September 9
Shim+Sutcliffe Architects
Brigitte Shim, partner of Shim+Sutcliffe Architects, Toronto

September 27
Henry C. Turner Prize
Charles A. DeBenedittis, senior managing director of design and construction at Tishman Speyer Properties

September 28
The Cost and Financial Benefits of Green Buildings
Greg Kats, principal of Capital E Group

exhibitions


SYMPHONY IN STEEL. © GIL GARCETTI

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national building museum

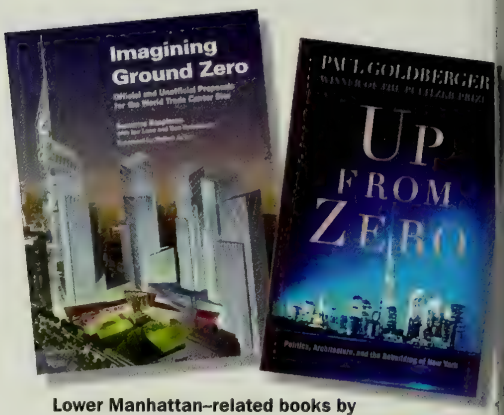
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News Briefs

Parade of Ground Zero books begins marching Three years seems to be just enough time to begin publishing comprehensive books on the architectural plans at Ground Zero. Among the first are ARCHITECTURAL RECORD and Rizzoli's *Imagining Ground Zero: Official and Unofficial Proposals for the World Trade Center Site* and Paul Goldberger's *Up From Zero: Politics, Architecture, and the Rebuilding of New York*, both to be released in September. RECORD's book, edited by Suzanne Stephens, is dominated by visually rich renderings of what could and would be downtown. It includes a forward by RECORD editor in chief Robert Ivy, FAIA. Goldberger's, published by Penguin, looks critically at the political and artistic machinations that have affected the newest evolution of Lower Manhattan. Meanwhile, Daniel Libeskind's autobiography, called *Breaking Ground: Adventures in Life and Architecture*, which includes a hefty section about the Trade Center, will arrive on November 4, in time for Christmas shopping season. *S.L.*



Lower Manhattan–related books by RECORD (left) and Goldberger (right).

Hardy Holzman Pfeiffer splitting into three firms The founding partners of Hardy Holzman Pfeiffer Associates (HHPA) disbanded effective August 1. The 37-year-old New York architecture firm is responsible for renovating Radio City Music Hall and the Brooklyn Academy of Music's Majestic Theater as well as designing the Cleveland Public Library and the Los Angeles County Museum of Art. The principals, Hugh Hardy, FAIA, Malcolm Holzman, FAIA, and Norman Pfeiffer, FAIA, are forming three independent organizations, each continuing to work with its base of national and international clients. H3 Hardy Collaboration, headed by Hugh Hardy, will remain in HHPA's current Manhattan offices at 902 Broadway. Malcolm Holzman will join with partner Douglas Moss to form Holzman Moss Architecture, with offices on West 29 Street in New York. Pfeiffer, with HHPA partners Stephen Johnson and Jean Marie Gath, will remain in Los Angeles under the name Pfeiffer Partners. Each of the new firms will retain its designated HHPA core staff. *T.I.*



A stamp gives Fuller a big, geodesic head (above).

Syracuse to offer country's first accredited arts journalism program Syracuse University is establishing the country's first accredited master's-level arts journalism program. The Goldring Arts Journalism Program, named after Syracuse trustees Lola and Allen Goldring, will begin in July 2005. It will be administered by the S.I. Newhouse School of Public Communications in collaboration with the College of Arts and Sciences, the College of Performing and Visual Arts, and the School of Architecture. While a few cultural reporting programs do exist, like the USC Annenberg Getty Arts Journalism program and the National Arts Journalism program at Columbia University, this will be the first time an accredited university will grant a degree in arts journalism. Applications for the program are due by February 1, 2005. *S.L.*

Buckminster Fuller honored with stamp The U.S. Postal Service has immortalized one of architecture's most creative thinkers, R. Buckminster Fuller, with his own stamp. The stamp's image reproduces an unusual painting of Fuller by Boris Artzybasheff that originally appeared on the cover of *Time* magazine in 1964. It depicts Fuller's head inscribed with the pattern of his best-known invention, the famous geodesic dome, patented in 1954. The playful graphic also illustrates several other objects conceived by the visionary architect, including the Dymaxion Car, a three-wheeled automobile; the 4D Apartment House; and elements reflecting the geometric and structural principles Fuller discovered. The postal service has released 60 million of the 37-cent stamps, which were officially issued at a ceremony on July 12. They can be purchased online at www.usps.com/shop. *S.L.*

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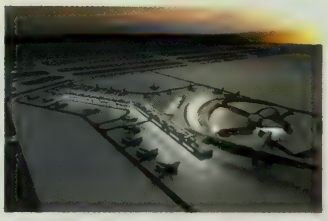
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News Briefs

New JetBlue terminal in New York After years of negotiation, JetBlue Airlines has developed a scheme with the Port Authority of New York and New Jersey for a new terminal at JFK Airport in New York City. The sleek, 625,000-square-foot structure, designed by Gensler, will include 26 gates and is expected to accommodate about 20 million passengers a year. It will sit next to Eero Saarinen's famous TWA terminal, whose future program, Gensler officials say, is still undetermined (although a renovation is scheduled shortly).



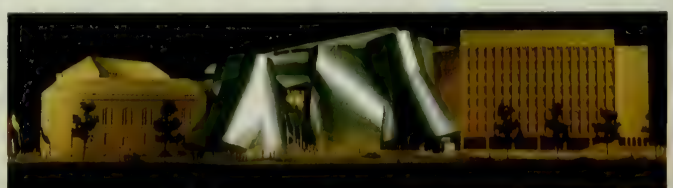
JetBlue's new terminal will surround Eero Saarinen's TWA.

The two terminals will be connected via pedestrian tubes. The new JetBlue facility will feature a trim, contemporary profile of taut metal and glass that is intended to keep a low profile next to the Saarinen building, which is regarded as a classic of Modern architecture. Constructed between 1956 and 1962, the TWA building features soaring, severely curved concrete wings that make it reminiscent of a bird in flight. The Port Authority had originally planned for TWA to fall out of use before vociferous protests from local groups helped lead it toward a different destiny. Construction is set to begin this fall, and opening is scheduled for 2008. *S.L.*

Architecture for Humanity launches newest competition On July 1, New York–based nonprofit Architecture for Humanity (www.architectureforhumanity.org) announced "Siyathemba" (the Zulu word for hope), a design competition for a soccer field to be built in 2005 in Somkhele, South Africa, an area that has one of the highest AIDS infection rates in the world. The facility will serve as a gathering place and AIDS education center for young people ages 9 to 14, and will serve as headquarters for the area's first-ever girls' soccer league. Local medical professionals from the Africa Center for Health and Population Studies will staff the center.

Participants are required to use sustainable and local building materials, and the facility must be able to be constructed, using local labor, for no more than $5,000. Participants must submit materials no later than October 15, 2004. The winner will be announced on World AIDS Day—December 1, 2004—in New York City. Architecture for Humanity is also organizing a traveling exhibition of select entries that will open in New York after the winner is named. *Deborah Snoonian, P.E.*

Gehry's Corcoran addition gets substantial financing City officials voted to authorize $40 million in tax increments to help finance a Frank Gehry–designed renovation and expansion of the Corcoran Gallery of Art in Washington, D.C. The Corcoran's fund-raising campaign has now reached $106 million, and ground breaking should occur in 2006, says trustee and campaign cochair John "Til" Hazel. *T.I.*



Gehry's Corcoran Museum addition (above) gets help from Washington, D.C.

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REBUILDING LOWER MANHATTAN

Ground Zero—three years later

It has now been three years since the most devastating attack ever on U.S. soil, and just as shattered psyches and lives are beginning to reveal the slightest signs of healing, so too has the rebuilding process at Ground Zero begun to show incipient marks of progress.

In the following special section, ARCHITECTURAL RECORD will explore the results of an extensive planning and rebuilding process that began just after the September 11 attacks. While the rebuilding is far from complete and faces major hurdles and criticisms (see pages 48 and 50), significant progress has been made. Designs for the majority of the area's components have been approved. S.L.

The Lower Manhattan Development Corporation's (LMDC) choice of Studio Daniel Libeskind as winner of its "Innovative Design Study for the Master Plan" in February 2003 was the first major step in the World Trade Center site design process. The team's plan embraced the street grid and had open plazas, sloping roofs, and twisted geometries; it included a sunken memorial, a museum, a descending spiral of office buildings, cultural facilities, and a transit hub.

The initial design for the 1,776-foot Freedom Tower, designed by David Childs, FAIA, of Skidmore Owings & Merrill (SOM) with consulting by Studio Daniel Libeskind, was unveiled in December 2003. The glass-and-steel tower will adhere to the asymmetrical street grid, torquing as it progresses in height. It will contain 2.6 million square feet of office space, with its upper portion a lattice-work structure of tension cables and wind turbines. The tower will be topped by a 276-foot spire, sitting off-center to echo the upraised arm of the Statue of Liberty nearby. Completion is scheduled for 2008.

A temporary transportation station, designed by former Port Authority architect Robert Davidson, FAIA, was completed in November 2003. It sits at the northeast corner of the site, shuttling passengers out of the heart of what was recently a demolition zone. The $224 million structure has three levels and a canopied steel entrance.

Relatively unknown architect Michael Arad, now a partner at New York–based Handel Architects, won the memorial competition this January, beating out 5,200 other entries with his proposal "Reflecting Absence." The scheme uses the Twin Towers' footprints as sites for two sunken reflecting pools, and includes a large landscaped park. A memorial museum and a space for unidentified victims' remains will reside below, accessible via ramps that pass the slurry walls of the original towers. Arad will work with California landscape architect Peter Walker and New York firm Davis Brody Bond.

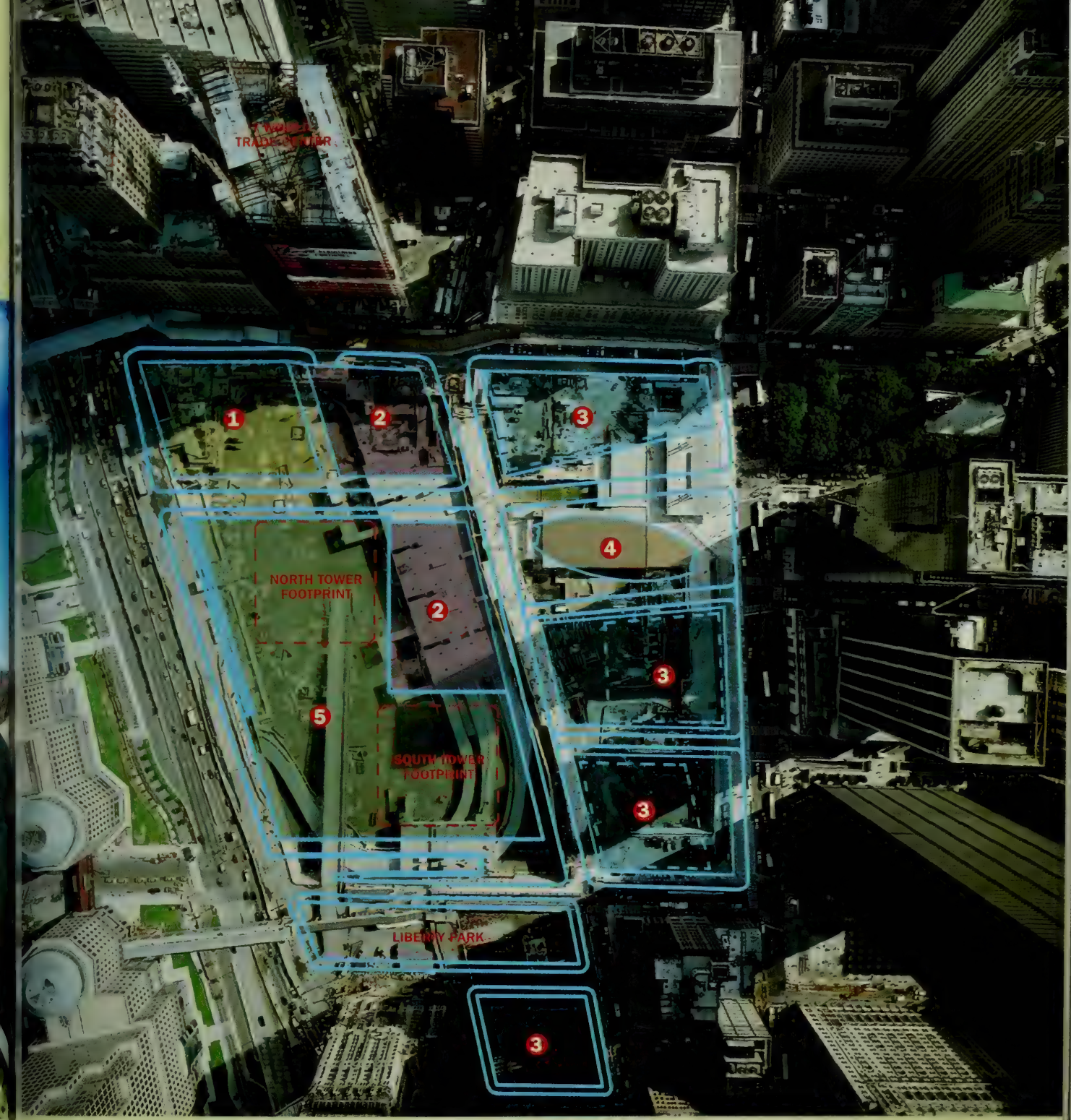
Santiago Calatrava's $2 billion, 200,000-square-foot, 5-level transportation hub, slated for a 2009 completion, will stand at the northeast corner of the site, situated in its own plaza. The ovular glass-and-steel structure will greet travelers at street level with a winglike, movable roof jutting 168 feet into the air. Train platforms and shops will be underground.

The LMDC has solicited design proposals, due September 1, for arts buildings to house the Joyce and Signature Theaters, as well as venues like the Drawing Center and future Freedom Center. In late September 2003, developer Larry Silverstein selected Fumihiko Maki, Norman Foster, and Jean Nouvel to design office towers, but preliminary designs have not been completed. *S.L.*

A recent rendering (below) shows the crystalline Freedom Tower, four other office buildings, a transit hub, and a large memorial and park. Office towers and cultural buildings are yet to be designed.



IMAGES: COURTESY DBOX/LMDC (RIGHT); PORT AUTHORITY OF NEW YORK AND NEW JERSEY (OPPOSITE)



Ground Zero seen from above

1. Freedom Tower. Skidmore, Owings & Merrill
2. Performing arts (top) and cultural buildings
3. Office towers. Jean Nouvel, Fumihiko Maki, Norman Foster
4. Transportation hub. Santiago Calatrava
5. World Trade Center Memorial. Michael Arad

REBUILDING LOWER MANHATTAN

Ground Zero—three years later: Architects weigh in

Reaction to the selected World Trade Center schemes has been mixed among architects, over 30 of whom were informally surveyed by ARCHITECTURAL RECORD. Comments reveal the projects' strengths and potential gaps, and reflect more than anything a desire to seek fresher, more emotionally relevant, and more unified ideas for Lower Manhattan.

Most respondents seemed annoyed that their colleague Daniel Libeskind, who won the LMDC's "Innovative Design Study for the Master Plan" in February 2003, appears to have been excluded from much of the subsequent design process. "The competition winning scheme was not respected," notes New York architect Steven Holl, whose team's scheme for the Trade Center was one of the finalists in the design study competition. ***"What has occurred is the result of a faulty competition, further compromised by the developers' maneuvers."*** New York–based Henry Smith-Miller adds, ***"Libeskind's provocative vision seems to have faded."***

While Libeskind and the LMDC maintain that his master plan is intact, and that the original competition was about "ideas," not concrete designs, New York–based Billie Tsien, the only architect on the original LMDC board, believes Libeskind must be disappointed to have played such a small role in the design process. ***"Anyone who has done a master plan wants to build some of the buildings."*** The competition's results may always be contested. The winner's role was never clearly defined, while the LMDC did little to correct any mistaken impressions. "The process was extremely unclear," says Margaret Helfand, FAIA, organizer of New York/New Visions, a coalition of architects and urban planners that has carefully critiqued designs downtown. "A lot of us were seduced into thinking it was for more than just a master plan."

Nevertheless, Tsien, like others, maintains that having Libeskind as the only designer may not have been effective. "I'm not sure that having the hand of Libeskind throughout would have been right in the end. It's not always best to have everything designed from one perspective."

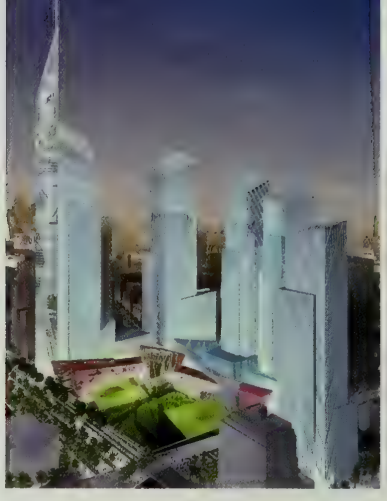
The scheme itself and the resulting pieces—the Freedom Tower, the memorial, the transit hub, and so on—have provoked steady debate with each design unveiling. First, the individual elements: Many jabs have been aimed at the Freedom Tower's top spire, which appears to its critics to be out of proportion with the rest of the building, while many find it lacks a powerful sense of symbolism and doesn't properly reflect the events of September 11. For many, echoing the Statue of Liberty is a weak premise. Tsien says it is ***"pretty much impossible to build a building as a symbol."*** There seems, meanwhile, to be a common feeling that the massive glass structure has a "corporate" aesthetic—perhaps, some posit, a reflection of developer Larry Silverstein's choice of SOM over Libeskind as designer. "It's just a developer's office building," notes Helfand.

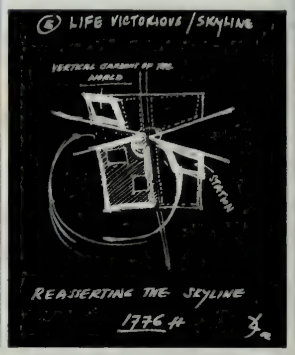
The memorial's overwhelming size, notes Chicago architect Jeanne Gang, AIA, "works against the potential power of an intimate experience, and it starts to de-densify that whole section of the city." Others feel the landscape design by Peter Walker has personalized the intimidating memorial and helped mitigate its "morbidity," though some say such efforts detract from its unity and spiritual power.

Many have praised Santiago Calatrava's inspirational transit station design, but others find the sculptural work out of place on the site. "The transit center is somewhat disappointing because it is such a signature piece," says Chicago-based Carol Ross Barney, FAIA. "It's not really about New York City." Adds Helfand, "I love his buildings elsewhere, but they're not about being neighbors with anything. ***They don't knit things together; they're objects.***"

And while Libeskind's plan has significant support, many criticize its overall lack of innovation, originality, and humanity. Slovenian architect Rok Oman, a member of Ofis, featured in RECORD's 2001 Vanguard issue, says that the winning schemes ***"look like any other commercial center or shopping mall around the world."*** California-based Eric Owen Moss, FAIA, points out, ***"Where is the fragility in the project? Where is the fundamental doubt?*** [Where is the reflection of] an America with a capacity to be wounded and to climb over that and acknowledge what happened? The project seems to ask for something that requires a broader vision, that acknowledges the face of history in a psychoanalytic sense."

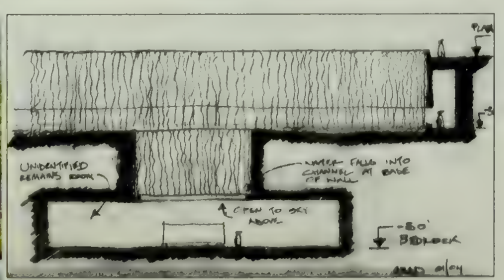
Some respondents feel that the need to come to terms with the events of September 11 may have been better fulfilled with a louder public voice. Says Moss: "We were hoping to participate in a discussion with a lot of people, not just developers and architects. [It is important to note that the LMDC board did include family members, politicians,



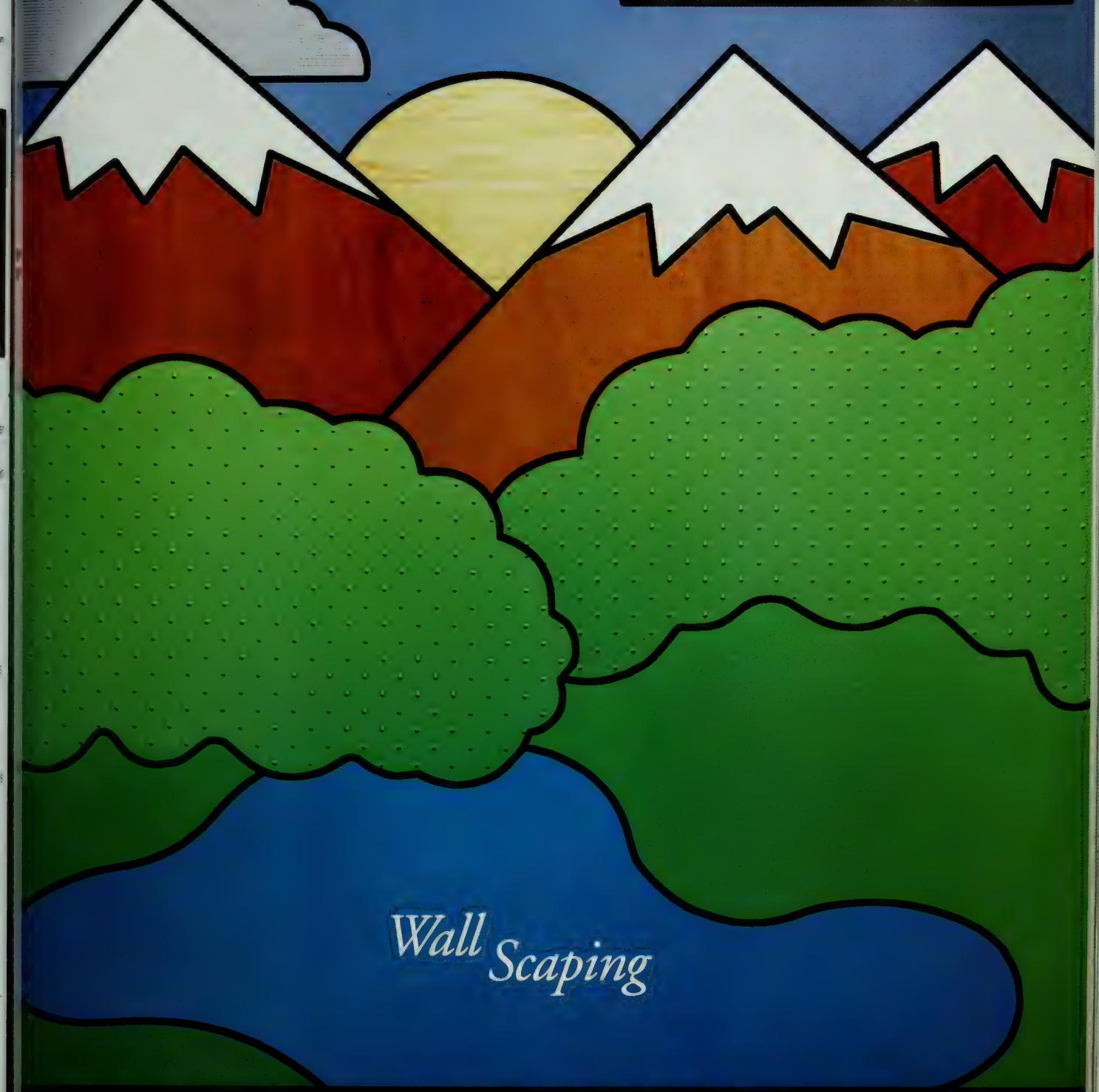


A rendering of Libeskind's plan (left), and one of his early sketches (below).





Arad's memorial now includes a park, thanks to Walker (left). An early sketch by Arad for the memorial (above).





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REBUILDING LOWER MANHATTAN



The Freedom Tower is designed to dominate the Lower Manhattan skyline.

and businesspeople, among others.] "Who's looking after the public good?" asks Helfand, who finds most of the schemes aimed chiefly at profits.

Others point out that the project's fast pace has left little time to digest events and propose effective reflections of them and of the healing process. Ross Barney notes that more time would present "an opportunity to discuss the future of cities as well as our national psyche." And Moss adds, "I think, in a fundamental way, we need to understand whether we understand enough to know what's happened."

Others seem disturbed that the present schemes don't look to the future but rehash old themes of what a city should be. Winka Dubbeldam, a Manhattan-based architect who envisioned a scheme for Lower Manhattan in the Max Protetch Gallery show *A New World Trade Center*, says, ***"Why make the program the same as it was, rather than create an innovative part of the city? It is essential to propose new typologies for downtown Manhattan."*** She proposes horizontal office spaces (more efficient, she says) and community-centric elements like apartments, schools, hospitals, parks, and supermarkets. Many of Dubbeldam's comments stem directly from her proposal at the Protetch show, but also reflect a salient desire to rethink programming. Brendan MacFarlane, a Paris-based architect who was also in the Protetch show, had hoped this would be "a place for people about people." Instead, he says, ***"I think our profession gave the worst kind of response. We lost the opportunity to send a message about the way we want to live together in the city of the future."*** Outspoken Dutch architect Kas Oosterhuis, another Protetch participant, is disappointed with the plan's "soberness," "lack of grief," and its refusal to "change the conditions that caused the WTC attack." He adds: "The program is like any other commercial program on any other downtown site of similar importance. New York has become a symbol of a frozen city: ***The current scheme is doomed to become the symbol and living proof of the end of the American Era."***

Some feel the plan and its components are not only outdated, but don't mesh with New York City itself. Notes Japanese architect Kengo Kuma: ***"Not only does it isolate another large population in skyscrapers, its master planning isolates the entire neighborhood from being a part of the history of what had occurred."*** A considerable number of respondents favor a larger residential component, a reflection of a changing society and a desire to establish a more vital urban landscape. Israeli architect Moshe Safdie referred RECORD to an article he published in *The New Republic* calling for hotels and apartments, which would "contribute to nighttime and weekend activities, overcoming the evening and weekend abandonment from which the area suffered."

More wonder if the present components could have better formal and programmatic linkages, pointing to an overabundance of "single-minded" works, disconnected "trophy buildings," and a lack of cohesive landscape and "public realm" planning. Rick Bell, FAIA, executive director of New York's AIA chapter and a member of New York/New Visions, notes that Libeskind's design guidelines have never been released to the public and have been ***"floating around since before Thanksgiving 2003, but have not had any impact on significant structures well into development, including the Freedom Tower."*** Had the guidelines held more sway, some hypothesize, subsequent designs may have developed a more powerful common formal language. "If there's no teeth in [the guidelines], then we can't expect anything to happen," adds Helfand. Hernan Diaz-Alonso—who was part of the group organized by Herbert Muschamp of *The New York Times* in the effort dubbed "Thinking Big," to develop plans for the Trade Center—finds the results culturally vapid and "formally a disgusting pastiche."

The plans also have champions, however. Gang feels "the Freedom Tower has developed into a compelling combination of structure, services, and form. ***The form itself is very elegant and visually interesting, the way that it twists and then transforms from a solid into a much lighter structure. I think it works and it's going be a unique piece of the city."*** Helfand finds most of the Freedom Tower unmoving, but she calls the upper portions "poetic," and a "powerful gesture (although likely unrealistic). And while Gang finds the memorial oversized, she notes, "The design effectively utilizes the section to knit together the urban spaces around the site. It's still a very large memorial, but the design chosen is working to counteract that by providing multiple levels. The memorial activity is essentially separated from the park."

Smith-Miller tips his hat to smaller projects downtown that have fallen under the radar, like the rehabilitation of historic Stone Street, which he calls "a nearly perfect and accurate 'period piece' restoration"; his firm's renovation of Pier 11 on the Hudson River, which "brought the context and architectures of the waterfront into focus"; and SHoP's pedestrian bridge over West Street, which "demonstrated certain unfamiliar forms derived in their practice." These projects, he says, "offer insight into the site's real future."

But the "real" future of the Trade Center site remains fluid, not static. Neither funding, market demand, nor designs are set in stone. Thus architects have made certain things abundantly clear: It's never too late to think harder about what's happened, to better anticipate the future, and most of all, to start thinking with our hearts. *S.L., with reporting by A.B.*



Trademark white dominates a rendering of Calatrava's transit hub.

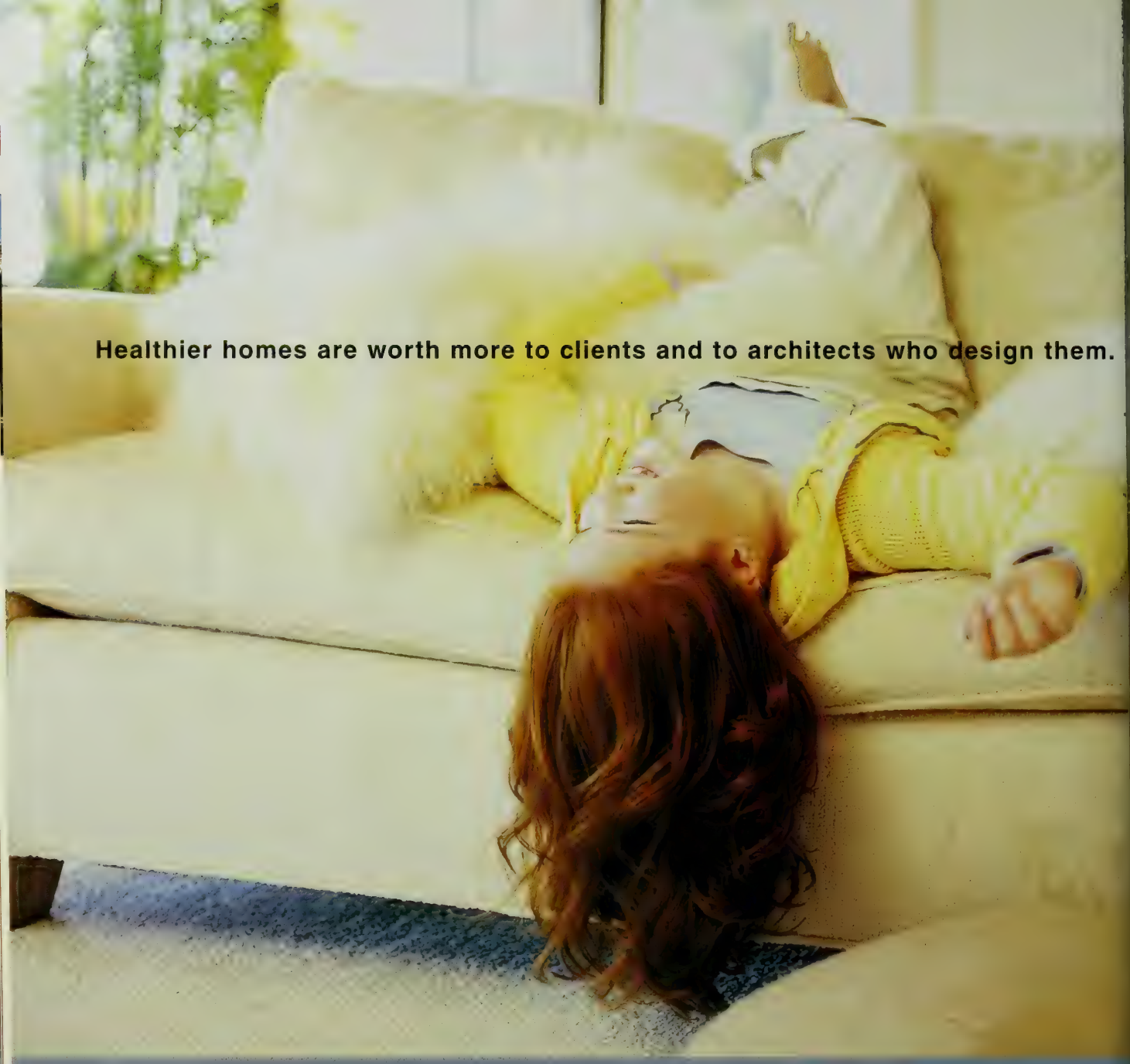


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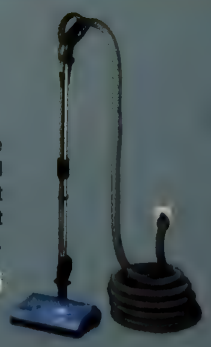


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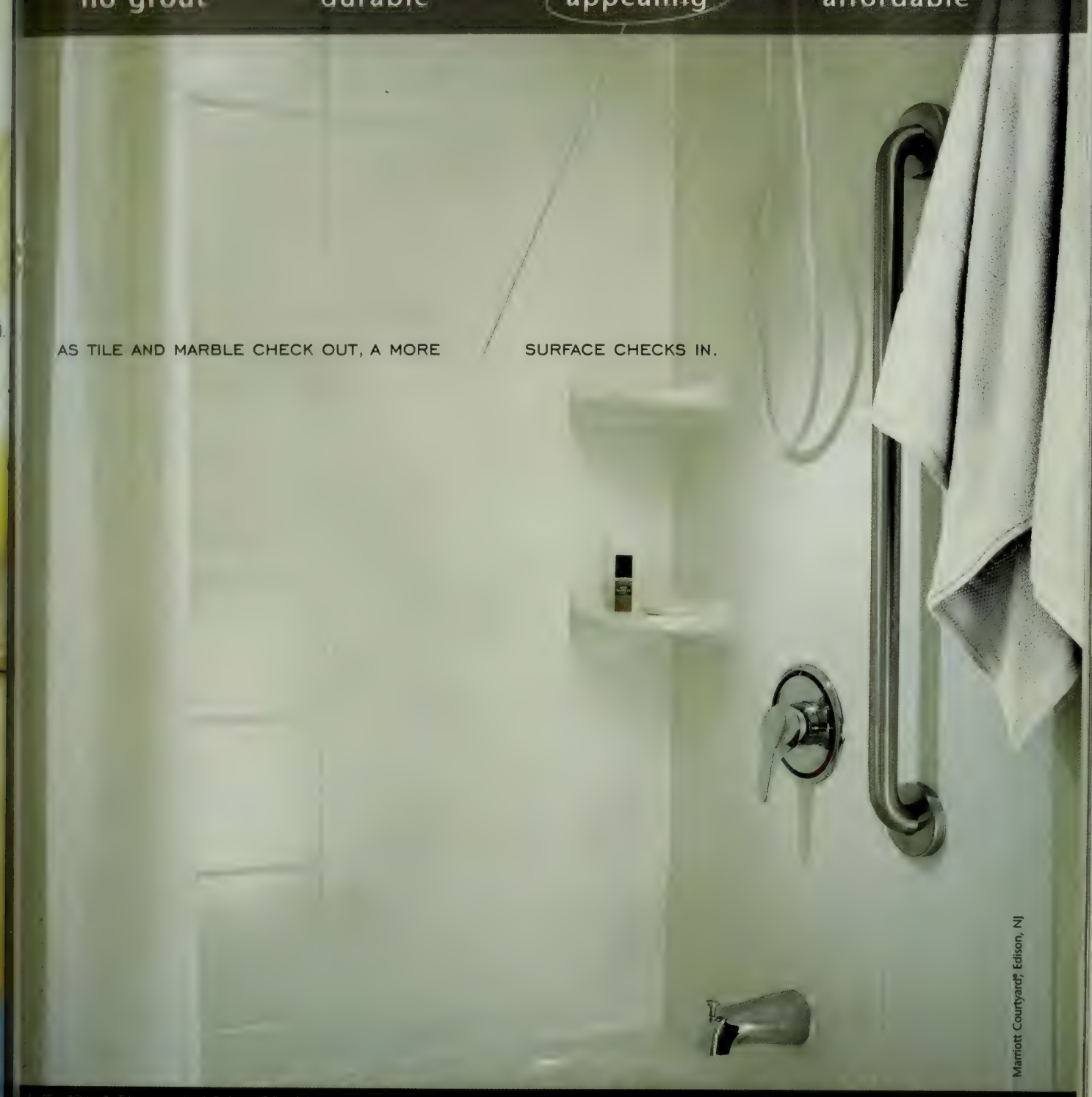
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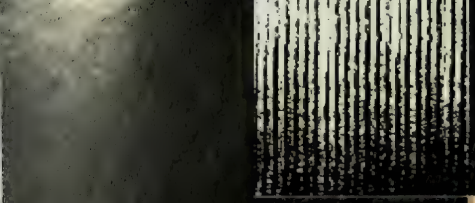
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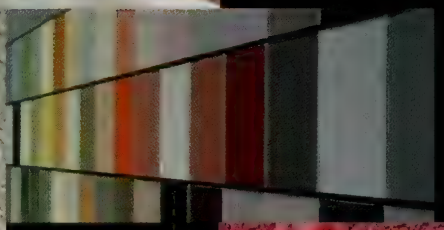
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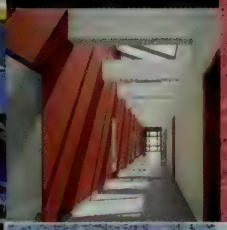






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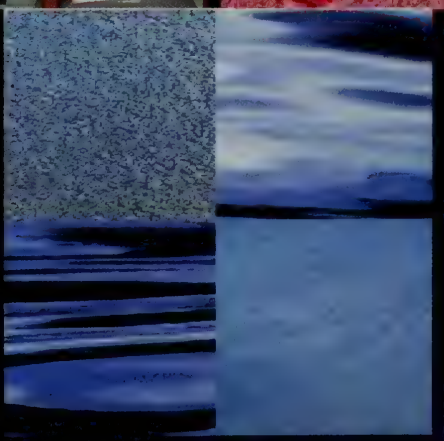




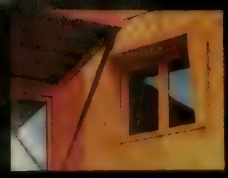
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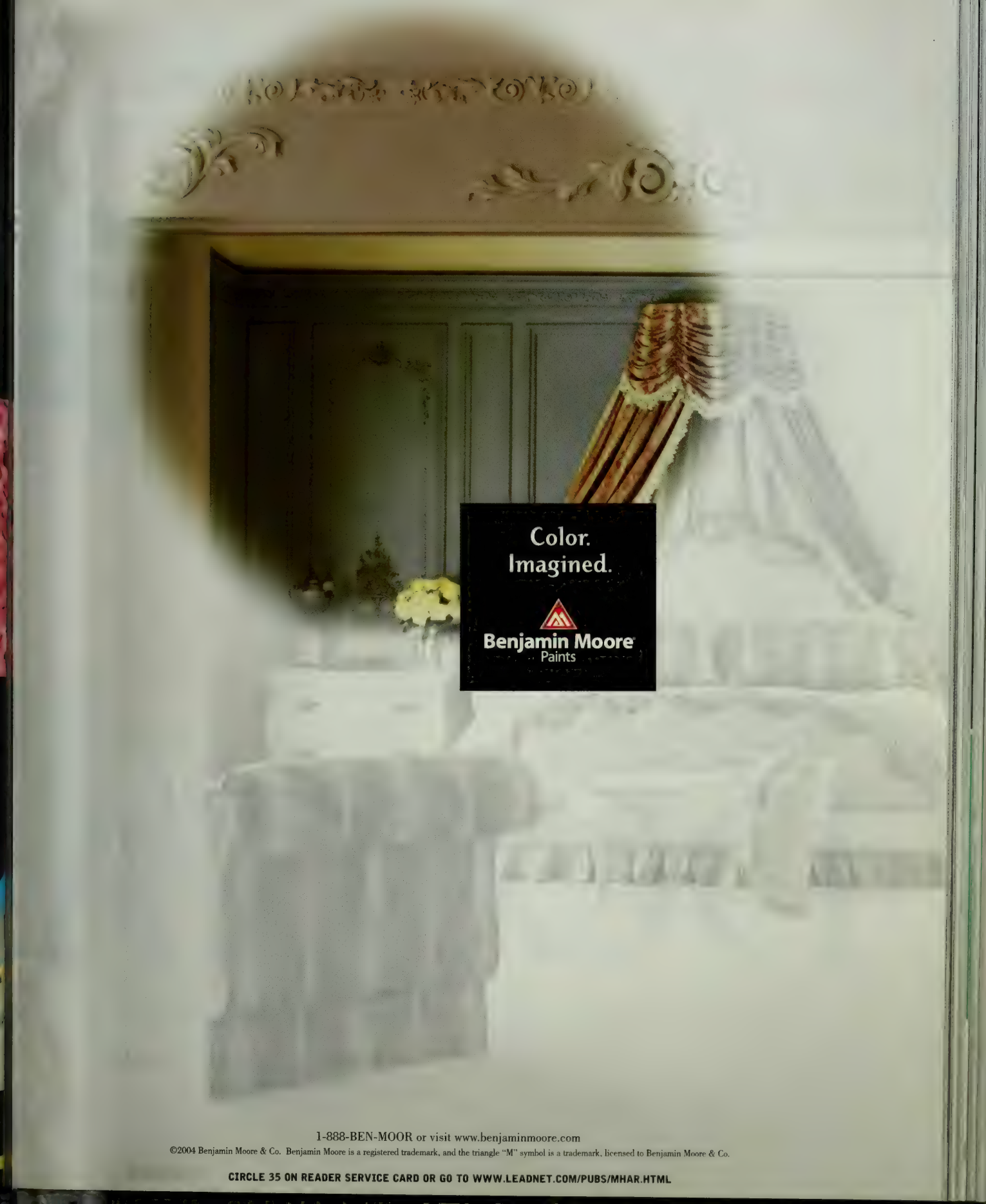
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Dates & Events

New & Upcoming Exhibitions

Home Tours Architects
San Francisco
September 1–October 31, 2004
An exhibition celebrating the 2004 Home Tours architects and homes, taking an in-depth look at the unique residences from the architects' perspective. At the AIA SF Gallery. Visit www.aiasf.org/archandcity for further information on all events in the Architecture and the City series.

Rita McBride: Theater Concrete
Long Island City, N.Y.
September 12–November 29, 2004
McBride's work examines elements of architecture and design through contemporary sculpture. At the Sculpture Center. For information, call 718/361-1750 or visit www.sculpture-center.org.

La Biennale di Venezia 9th International Architecture Exhibition, U.S. Pavilion 2004
Venice, Italy
September 12–November 7, 2004
ARCHITECTURAL RECORD and The Bureau of Educational and Cultural Affairs of the U.S. Department of State are presenting *Transcending Type*, an exhibition featuring six cutting-edge U.S. firms that explore new models for iconic building types. The presentation includes drawings, digital media, and three-dimensional installations.
Go to www.labiennale.org for more information.

Samuel Mockbee and the Rural Studio: Community Architecture
Scottsdale, Ariz.
October 1, 2004–January 2, 2005
This traveling exhibition includes both models and photographs of Auburn University's Rural Studio projects, as well as a number of Mockbee's paintings and sketchbooks from the Rural Studio.
At the Scottsdale Museum of Contemporary Art. Call 480/994-2787 or visit www.smoca.org.

The GardenLab Experiment
Pasadena, Calif.
September 7–October 17, 2004
The Experiment is an ecology lab bringing together within a single forum a diverse group of designers, artists, scientists, activists, and performers involved in environmental and ecologic issues.
At the Art Center of Design. Visit www.artcenter.edu/events/gardenlab for further information.

Massive Change: The Future of Global Design
Vancouver
October 2, 2004–January 3, 2005
An exhibition that takes a look at how rapidly evolving technologies have enabled design to affect change on a global scale, and how this phenomenon has placed us at the beginning of a new, unprecedented period of possibility. At the Vancouver Art Gallery. Call 604/662-4719 or visit www.vanartgallery.bc.ca.

Washington: Symbol and City
Washington, D.C.
Opening October 9, 2004 (ongoing)
This long-term exhibition examines the story of this most complicated of cities, both a symbolic federal capital and a living city of neighborhoods and families. Recently re-curated to assure ongoing relevance. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Second Annual OpenHouseNewYork (OHNY)
New York City
October 9–10, 2004
OHNY promotes awareness of New York's architectural and design achievements by providing the public with free access to sites of historic and contemporary significance in neighborhoods in all five boroughs. Call 917/626-6869 or visit www.ohny.org.

Frank Gehry, Architect: Designs for Museums
Washington, D.C.
October 2, 2004–February 21, 2005
A multimedia exhibition showcasing Gehry's design contributions and celebrating both his completed buildings as well as several yet-to-be-realized museum projects. An exhibition of Gehry's furniture is also on view. At the Corcoran Gallery of Art. Call 202/639-1770 or visit www.corcoran.org.

The Sixties: Montreal Thinks Big
Montreal, Quebec
October 20, 2004–August 14, 2005
Montreal's transformation in the 1960s made the city an archetype of the great metropolises of the Western world. As host of Expo 67, it asserted itself as a city of the future. This exhibition, at the Canadian Centre for Architecture, will illustrate the processes that brought about the changes that were recognized all over the world. Call 514/939-7000 or visit www.cca.qc.ca.

1st Architectural Biennial Beijing 2004
Beijing
September 20–November 20, 2004
The first serial exhibition of architectural culture and the building industry in China, comprising three parts: exhibition, forum, and architectural theme park. Call 86-10-880/83260-6263 or visit www.abbeijing.com.

Ongoing Exhibitions

Big & Green: Toward Sustainable Architecture in the 21st Century
Chicago
Through September 12, 2004
This national touring exhibition presents 50 projects from around the world portraying architecture that demands less of our natural resources and infrastructure, enhances comfort, and is economical over the life of a building. In the ArchiCenter. Call 312/922-3432 or visit www.architecture.org.

Nothing More Modern: PSFS
New Haven
Through November 5, 2004
The first exhibition to explore the design, construction, and adaptive reuse of the landmark Philadelphia Saving Fund Society Building (PSFS), an icon of International Style Modernism. In the gallery of Yale's Art and Architecture Building. Call 203/432-2288 or visit www.architecture.yale.edu.

Playing the Field: The Art and Design of Godley-Schwan
Philadelphia
Through November 19, 2004
This retrospective exhibition of furniture, process drawings, and sketchbooks highlights the bridging of craft, art, and design—a trend that took off in the American furniture market during the 1980s and 1990s. At the Philadelphia University Design Center. Visit www.philau.edu/designcenter.

Richard and Dion Neutra VDL Research House II Exhibit
Los Angeles
Through September 9, 2004
The home of the architect and his family is represented in models, photographs, and drawings. At A+D Museum. Call 310/659-2445 or visit www.aplusd.org.

Ronan and Erwan Bouroullec
Los Angeles
Through October 18, 2004
The first North American museum exhibition to focus on the work of French designers Ronan and Erwan Bouroullec. The brothers have burst onto the international design scene in the past few years with their futuristic furniture, products, and interior designs. At the Museum of Contemporary Art. Call 213/621-2766 or visit www.moca-la.org for additional information.

Beyond the Box—The Architecture of William P. Bruder
Los Angeles
Through October 14, 2004
An exhibition of Will Bruder's work will be on view at A+D Museum. For more information, call 310/659-2445 or visit www.aplusd.org.

Chicago Green
Chicago
Through September 12, 2004
Models of 15 green buildings designed by Chicago-based architects for sites in Chicago and around the world are presented in this exhibition. In CitySpace. Call 312/922-3432 or visit www.architecture.org.



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Lectures, Conferences, Symposia

Paul Goldberger on the Rebuilding of Lower Manhattan
Washington, D.C.
September 7, 2004
Paul Goldberger, the dean of the Parsons School of Design and Pulitzer Prize–winning architecture critic for *The New Yorker*, will discuss his new book, *Up from Zero: Politics, Architecture and the Rebuilding of New York*. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Charles A. DeBenedittis: Winner of the 2004 Turner Prize
Washington, D.C.
September 27, 2004
Charles A. DeBenedittis, senior managing director of design and construction at Tishman Speyer Properties, is the third recipient of the National Building Museum's Henry C. Turner Prize for Innovation in Construction Technology. In conversation with Norbert Young, FAIA, president of McGraw-Hill Construction, DeBenedittis will discuss some of his notable projects and his involvement in innovations in building technology, materials, and methods. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Building for the 21st Century: The Cost and Financial Benefits of Green Buildings
Washington, D.C.
September 28, 2004
Greg Kats, principal of Capital E Group, will discuss the most current research that indicates green design is very cost-effective for most buildings today. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

International Practice Issues: Cross-Cultural Partnerships
New York City
October 2, 2004
This conference will bring together architects from around the world to speak about the challenges and opportunities of international collaboration and joint ventures. At the Center for Architecture. Call 202/626-7415 or visit www.aia.org/international.

Design Charrette for Social Justice
Cincinnati
September 17–19, 2004
Miami University's Center for Community

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Dates & Events

Engagement in Over-the-Rhine and Architecture for Humanity (AFH) invite the design community to take part in linking design advocacy with social movements addressing homelessness, poverty, and civil rights. Visit www.architectureforhumanity.org.

Modern Dutch Housing: A Living Architectural Laboratory
Amsterdam
October 3–8, 2004
This conference will investigate the history, planning, and contemporary design of Dutch social housing with seminars, site visits, a charrette, and discussions with eminent Dutch architects, planners, academicians, historians, and city officials. For further information, visit www.aia.org/cod/brochure/041003/default.asp.

The Tile Seminar
Boston: September 20, 2004
New York City: September 21, 2004
Philadelphia: September 22, 2004
Washington, D.C.: September 23, 2004
The seminars are intended to educate the architectural and design communities about the latest technologies, revolutionary products, installation systems, techniques, specifications, and standards within the tile industry, and provide tools necessary to better understand and specify tile. Call 800/472-4588 or visit www.tileseminar.com.

The 2004 Design Awards Symposium
New York City
September 20, 2004
The AIA New York Chapter is holding a moderated discussion that presents and honors the finest examples of architecture, interiors, and unbuilt projects submitted by local firms and design individuals. At the new Center for Architecture. Call 212/358-6117 or visit www.aiany.org.

100% Design 2004-x10
London
September 23–26, 2004
The 10th edition of the U.K.'s foremost international contemporary design exhibition, providing a unique mix of small and large companies, established and new designers, U.K.-based and international exhibitors. At Earls Court 2. Call 44(0)870/420-4919 or visit www.100percentdesign.co.uk.

New Design Cities
Montreal, Quebec
October 6–8, 2004

An international symposium that aims to discuss different positioning and development strategies through design used by such cities as Antwerp, Glasgow, Lisbon, Montreal, New York, Saint-Etienne, and Stockholm. At the Canadian Centre for Architecture. Visit www.ville.montreal.qc.ca/colloquedesign.

Green Futures: A Forecast for Architecture in Chicago
Chicago
September 9, 2004
The steel frame and the elevator transformed the urban landscape of 19th-century Chicago. Will the city's current push for rooftop gardens and other green building strategies have an equally significant effect? Five of Chicago's leading young architects debate the possibilities. At the Museum of Contemporary Art. Call 312/397-3841 or visit www.mcachicago.org.

Sustainable Communities: Learning from the Dutch Experience
Chicago
September 29, 2004
A symposium cosponsored by the Alphawood Foundation, the Consulate General of the Netherlands, and the Illinois Institute of Technology featuring an array of Dutch speakers on the topic of sustainability. At the McCormick Tribune Campus Center, Illinois Institute of Technology. Call 312/567-3000 or visit www.iit.edu.

Introduction to the Structural Provisions of the 2003 International Building Code
Orlando, Fla.
October 13–14, 2004
A two-day course offered to benefit architects, engineers, planners, designers, developers, builders, and others who use building codes in planning and designing facilities for human occupancy. At the University of Wisconsin-Madison Department of Engineering Professional Development. Call 608/262-0638 or visit www.epdweb.engr.wisc.edu.

The 8th International DOCOMOMO Conference
New York City
September 26–October 2, 2004
"Import/Export: Postwar Modernism in an Expanding World 1945–1975" is the topic of the annual conference held by the international organization dedicated to the documentation and conservation of buildings, sites, and neighborhoods of the Modern movement. At Columbia University. Visit www.docomomo2004.org or www.docomomo-us.org.

Tour of the San Francisco-Oakland Skyway Bridge Casting Yard and Construction Site
Oakland
October 4, 2004
Segment casting is under way for the $1 billion San Francisco-Oakland East Bay Skyway Bridge. This ASBI tour involves a bus trip to the casting yard in Stockton, with luncheon and travel to the construction site on the Harbor King. Call 602/997-9964.

Frank Gehry
Washington, D.C.
September 28, 2004
Frank Gehry speaks in the Corcoran Gallery of Art's Frances and Armand Hammer Auditorium. For additional information, call 202/639-1770 or visit www.corcoran.org.

The ASLA 2004 Annual Meeting and Expo Salt Lake City
October 29–November 2, 2004
The American Society of Landscape Architects (ASLA) Expo will offer more than 500 exhibits, featuring the latest landscape architecture products and services. The theme of the meeting will be "Natural Spaces, Public Places." For more information, call 202/898-2444 or visit www.asla.org.

Baltimore Architecture Week
Baltimore
October 9–16, 2004
A series of events emphasizing the importance of the design community through lectures, tours, films, and exhibits. Visit www.aiabalt.com for further information.

Taliesin West: Building in Harmony with Nature
Scottsdale, Ariz.
October 21–23, 2004
The Scottsdale site will host tours, presentations, and dinners honoring Frank Lloyd Wright's sensitivity to fragile lands. The conference will explore several of the design concepts that dominated Wright's 70-year career. For further information, call 480/627-5373 or visit www.franklloydwright.org.

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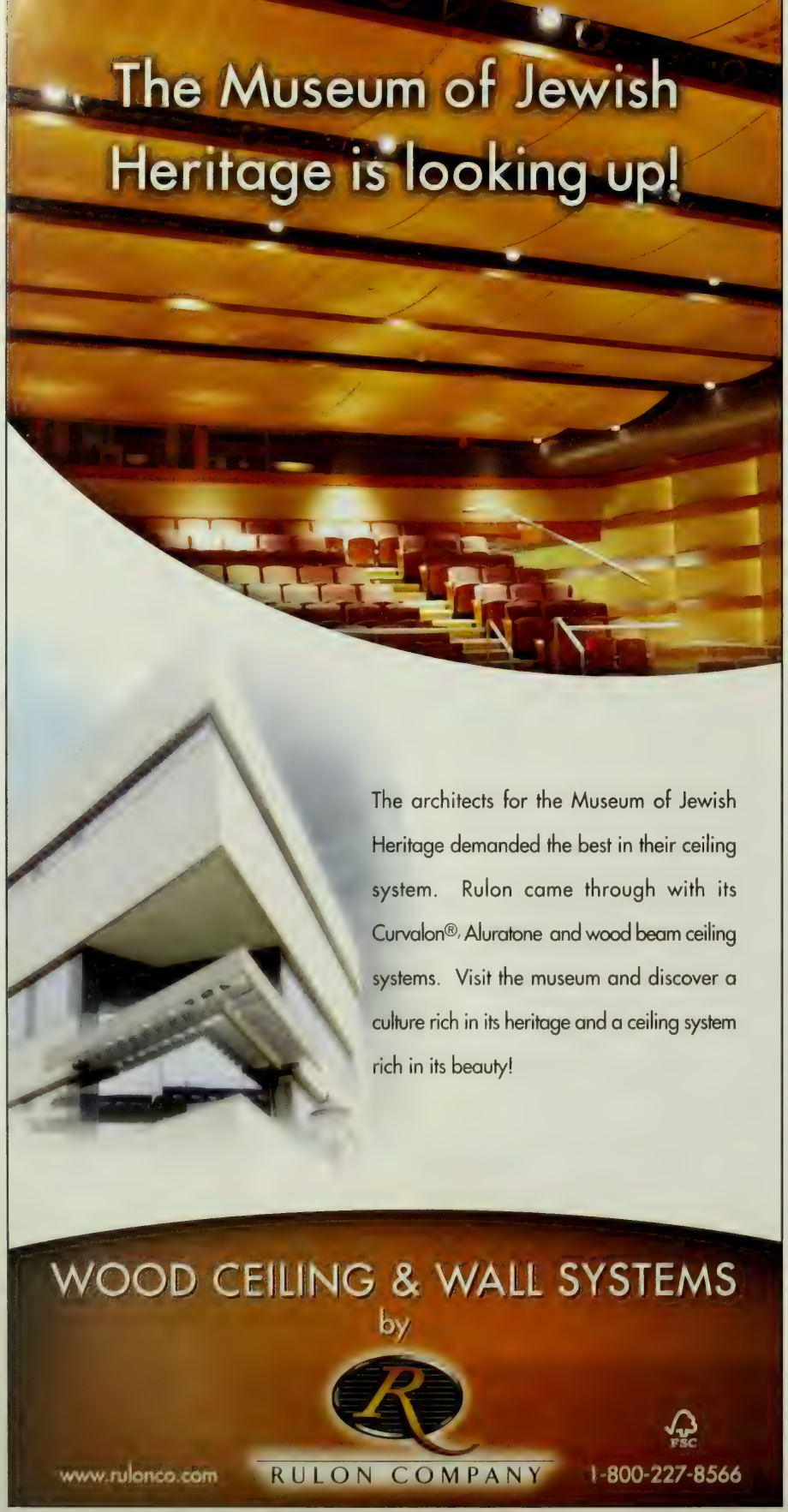
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Dates & Events

Competitions

The International Bauhaus Award
Deadline: October 23, 2004
When cities become transit places, the urban space changes: Flexibility and mobility become key qualities. For further information, visit www.bauhaus-dessau.de or e-mail award@bauhaus-dessau.de.

Architecture for Humanity 3rd International Design Competition
Deadline: October 1, 2004
A competition to design a facility in Somkhele, South Africa, an area with one of the highest HIV/AIDS rates in the world. It will be run by medical professionals and will serve as a gathering place for youth between ages 9 and 14. For more information, visit www.architectureforhumanity.org.

The Annual WinGuard Home Showcase Contest
Deadline: October 31, 2004
The contest is open to internationally licensed builders and architects with projects in coastal areas, specifying WinGuard Impact-Resistant Windows and Doors. Call 877/550-6006 or visit www.winguard.com.

Southern Branch Design Competition
Deadline: September 16, 2004
The National Palace Museum, ROC, is sponsoring an international architecture competition encompassing 12–15 hectares (30–37 acres) of planning and design in Taibo City, Chiayi County, Taiwan. Visit www.npm.gov.tw.

C2C Home Competition
Roanoke, Va.
Registration deadline: November 15, 2004
Competition deadline: December 15, 2004
Entries must be designed with a goal of achieving new standards in sustainability and lead to the actual construction of at least 10 new homes. For more information, visit www.c2c-home.org.

Rome Prize 2005
Deadline: November 1, 2004
The American Academy in Rome fellowships are awarded in several fields, including Architecture, Design, Historic Preservation and Conservation, and Landscape Architecture. For further information, call 212/751-7200x47 or visit www.aarome.org.

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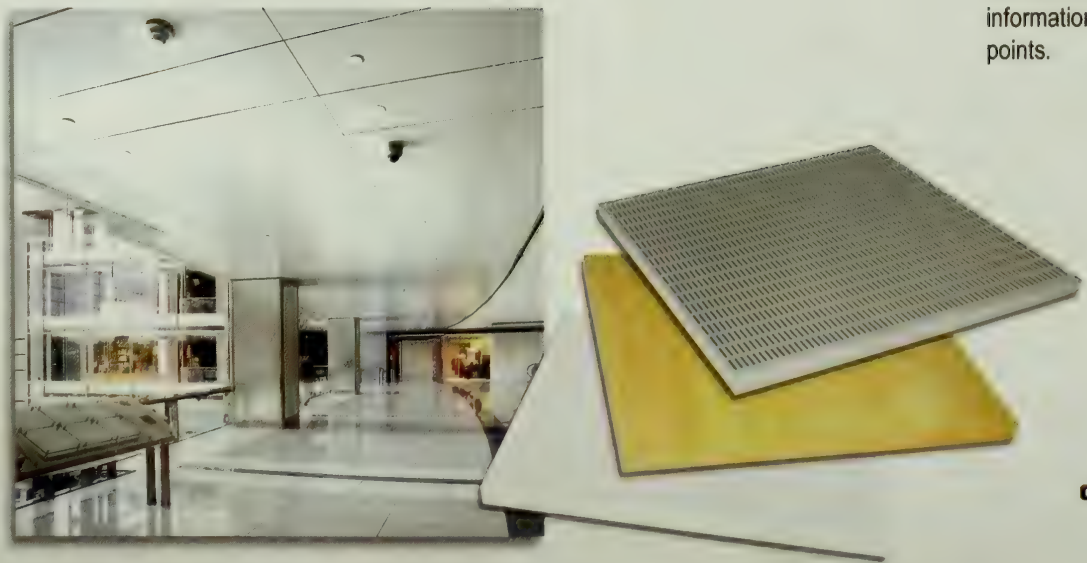
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For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

archrecord2 takes a stroll through Boston to see what the architects of Studio Luz are doing. Their projects provoke the senses in several inventive ways. Find out more about them in the Design report below and on our Web site. What's a busy architect to do when there's not enough time to attend a desired event? In our Work section, Davis Marques discusses the creation of Architecture Radio.

DESIGN

Redefining social spaces

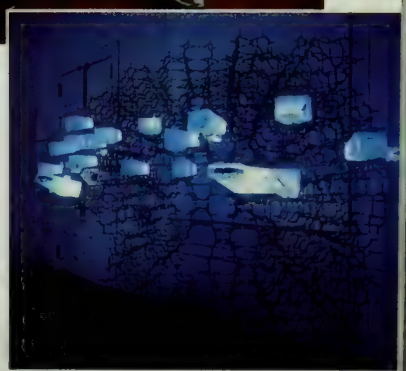


Husband and wife team Hansy Better Barraza and Anthony Piermarini met as undergraduates at Cornell University and later attended the Harvard Graduate School of Design. Remaining in Boston after graduation, they found themselves working for several firms, including Office dA, where Barraza was employed, and Kennedy and Violich Architecture, where Piermarini did a stint. The couple decided to take the leap and establish their own practice, Studio Luz, in 2001. It did not take long to garner work or attention: This past year they were one of the winners of the Architectural League's Young Architects Competition.

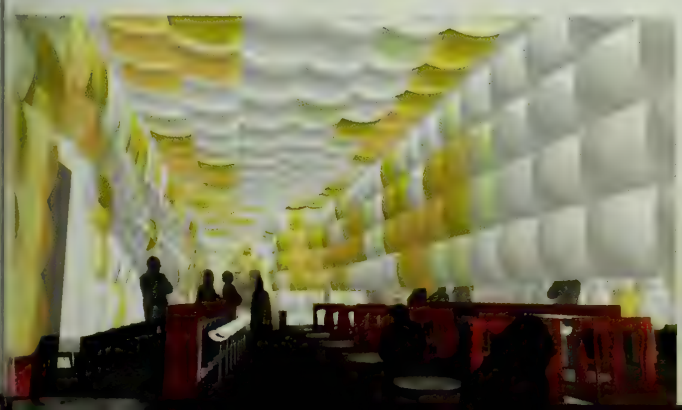
Barraza explains that the competition's theme, "If ... Then," presented a challenge for her and Piermarini to explore formally what goes into the creative process. "In some cases, architecture is transmutation," she says, "and in those instances, a final design is never agreed upon between the architect and client. Instead, it's an evolving process." For their entry in the League's exhibition, the pair set out to construct an armature whose final form was not fully predetermined. The result was a framework with viewfinders that would hold and display photos of their work and engage the audience.

Studio Luz's initial projects allowed the team to explore privatizing public spaces, as well as controlling interior environments. In Boston's OmBar, for example, the clients were in search of a venue for entertainment that would feel exclusive enough for private dining but could be transformed into a sleek





Young Architect's Forum Installation, New York City, 2004
A study in transmutation, this reusable and adaptable exhibition engages its viewers. The magnified viewfinders that present the firm's projects are lit by electroluminescent film.



Diva Lounge, Somerville, Mass., 2004
Many aspects of this project, from lighting to seating, provoke both the tactile and visual senses. The bubble interior, using LED lighting and heat sensors, reacts to the movement and massing of people.

lounge space. Recycling existing materials from what was once a subterranean bank vault became part of the design. The architects took a large amount of the remaining tempered glass, shattered it, and covered the shards with translucent resin to form the central column, the bar, and the floor. Creative lighting of the composite crushed glass and resin produces both sparkle and ambience.

Continuing their interest in lighting and design that produce an all-encompassing sensory experience, Studio Luz began work on Diva, another lounge in the Boston area. Referring to the design of Diva, Barraza says, "Architecture doesn't speak, so we took it upon ourselves to create a way for it to communicate." Covering the walls with LED-illuminated domes and heat sensors, they created lighting that changes as the patrons of the lounge move about. As people congregate in one section and the density and temperature changes, the lights respond.

In another project, Studio Luz has found an opportunity for expression in the public realm. With W.O.W., a woman's clothing boutique that features the work of local artisans and tailors, the owners wanted a funky facade that would sheathe the store, a former gas station. Piermarini explains that the scheme, inspired by fashion design, will utilize irregularly shaped polycarbonate panels that will fit together like puzzle pieces.

The firm's upcoming projects are more institutional and much larger in scale. These include a Fellowship Center in Massachusetts and an orphanage in Haiti that will house 90 children and include a school component for 400 as well as a medical clinic. "These projects are meant to have a major community presence and will take on social responsibility," says Piermarini. "This work really inspires us." *Randi Greenberg*

For more projects and photos from Studio Luz's portfolio, go to *archrecord.construction.com/archrecord2/*.



OmBar, Boston, Mass., 20

Set in what was once a bank, t architects used several existin elements to their advantage, designating the vault as a VI The designers sought to creat flexible, multifunctional spac





W.O.W., Newton, Mass., 2004

Experimentation with prototypes and materials resulted in a jigsaw-puzzlelike design for the building's facade. The store owners will be able to display their work in the apertures within the design.



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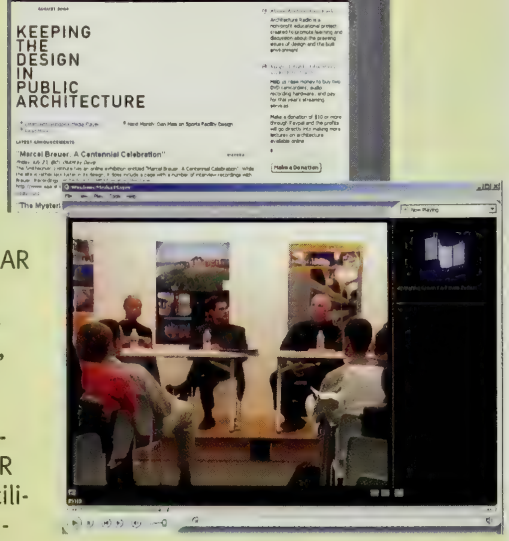
Architecture hits the virtual airwaves

It's a common lament. While architectural-based events, lectures, and interviews abound, for many there is either not enough time to attend them or they occur in a completely different time zone. In the summer of 2002, designers Davis Marques and Nikki Chen came up with a solution: the Web site Architecture Radio (AR).

Marques and Chen realized that in the two years after graduating from SCI-Arc, due to the hours they were logging at their firms, they were able to attend only one lecture at their alma mater. "There are a lot of people out there just like us," says Marques. "While we want to continue to learn by attending these events, we just can't make the time." Since the technical aspects of creating a Web-based media server were something with which Marques was familiar—he had recently set up an audio server so friends could listen to music stored on his computer ("invariably, I end up leading technical aspects on projects with my firm," he explains)—launching AR was not too much of a challenge.

The site's content, with topics ranging from design to marketing, is drawn from events in AR's local San Francisco area as well as in other locations, where people volunteer to tape events. Early on, AR decided its role would be as a facilitator rather than originator of content. "This organization's purpose is to make things more convenient and to utilize content that is already out there in a more effective and simpler manner," says Marques. Also available on the site are links to other informational sites with streaming media.

Marques and Chen's vision reaches beyond the architectural community. Marques explains,



An example of a panel discussion in streaming video from Architecture Radio's Web site.

"We want to be a place that architecture professionals and students come to, but we also hope to attract the general public, who can learn about the how's and why's of the field." *R.G.*

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Cairo wrestles with authenticity while restoring its past and designing (or redesigning) its future

Correspondent's File

By Seif El Rashidi

As far as cities go, Cairo is an urban enfant terrible. Unruly and continually expanding, its dense mass defies any attempts at homogenization. It is a rebel's delight and a planner's challenge. Even in the city's quiet residential areas, parked cars jostle for space on tree-lined streets, detracting from the old-world feel of turn-of-the century architecture. The 1960s quarters, planned as practical residential extensions to the city center, have taken on a new life. Except for the odd house or two, tallish buildings have replaced three- or four-story apartment blocks—but this is nowhere near a metropolis of slick skyscrapers. Exterior fittings vary from apartment to apartment, not building to building, and ground-floor shops boast a riot of colors and forms, visually unrelated to what lies above them.

Yet urban free-spiritedness makes Cairo livable, turning an immense monument to density into a multitude of personalized spaces, neither Belle Epoque nor cutting-edge, but remarkably human.

That said, there are frequent attempts to tame the city. Cairo's medieval core, long ignored despite its architectural and historic wealth, is suddenly attracting official attention. In Gamaliyya, its northern, more prosperous half and the heart of the tourist trade, wealthy merchants moved out long ago, leaving the less affluent to deal with deteriorating infrastructure and a crumbling building stock. Government officials are flirting with the idea of turning the area into an "open-air museum"—in other words, sanitizing the district, restoring its monuments, and replacing its local industries with more bazaars and tourist traps. There is much to be said for upgrading historic Cairo—its condition is dire—but transforming it into a Disney-style city of the orient will only destroy its most redeeming quality: authenticity. It's a tall order anyhow: This is a place where traditional markets selling everything from onions to water pipes are doing good business, and as it is, there are enough souvenirs to fill every tourist backpack several times over.

There's certainly a buzz of restoration work in the air, and it's hardly the quiet, meditative activity it's made out to be. But the results are surprisingly serene, especially for Cairo. Darb al-Asfar, an alleyway with three historic houses recently restored with a grant from the Arab Fund for Development, is Gamaliyya's anomaly: It's peaceful and pristine. There's greenery, and the architecture is bona fide 17th century, making it a much-loved place by the architecturally savvy who know that it's there. And that's the problem. Historic Cairo is a no-go zone for most Egyptians who don't work or live there; private investment is almost nil; urban decline is steady; and gentrification just isn't happening.

Instead, recently constructed motorways, linking the city center to new suburbs, have ripped through Cairo's innards, exposing an expanse of boxy, unfinished-brick buildings

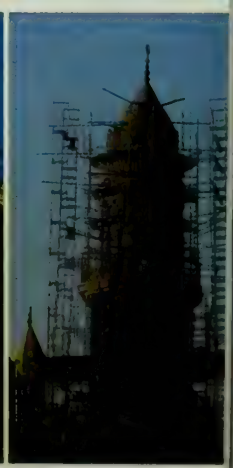
Seif El Rashidi is an urban planner at the Aga Khan Trust for Culture's Cairo Project.





Suburban construction encroaches on agricultural land southeast of the pyramids (above). Italianate villas (right) celebrate escapism, a model of American suburbia, and an abstracted image of the past, but ignore local culture. Restoration of the Qalawun mosque continues in the city's historic center (below).





engulfing the countryside at horrific speed. Beyond these, where palm groves and alfalfa fields still remain, is Cairo's new urban playground, which the upper classes, seeking refuge from the city's relentless presence, are increasingly calling home. Residents here range from well-off by local standards to fantastically rich, and most, though culturally Egyptian, are buying into a model of wealthy American suburbia. The new architectural formula is simple: arched windows, gabled roofs, and stucco—a clear reaction to the brutal functionalism of the post-1950s building scene. A textbook definition of pastiche? Certainly. An architect's horror? Almost always. But also, a more comfortable living environment; more attention to aesthetics, space, and tranquility. As an alternative to stressful city-center apartment life, how many care that the Corinthian columns are tacky and the colors fit for a doll's house? A few.

On a hill beside the pyramids, the Khalifé residence commands an excellent view. And this is pop-star territory: Amr Diab—Egypt's best-known—lives next door, in a pseudo-Moorish, pseudo-Italianate mansion. The Khalifés, a sophisticated Lebanese-Egyptian hotelier couple, represent that segment of Middle Eastern society overlooked in the die-hard stereotyping of wealthy Arabs as crude and oil-rich. They commissioned the Beirut-based Atelier des Architectes Associes (Jacques Liger-Belair, Jean-Pierre Mégarbané, and Georges Khayat) to design a private house in Cairo that would neither reject tradition nor slavishly imitate it. The result is a refreshingly modern, spacious residence, where crisp lines and pure forms reflect an intelligent interpretation of the local past.

A discreetly placed main entrance is set alongside a fountain in a raised courtyard. A vaulted reception hall is awash with diffused light. A bath resides where sunbeams stream in through round openings in the ceiling. Wooden screens grace the ground-story windows. All these are the trappings of what could easily have been revivalist architecture, except that, fortunately, there isn't a grain of revivalism here. Even squinting, the surest test of disguised historicist architecture, exonerates the architects—the building still looks modern when the details blur.

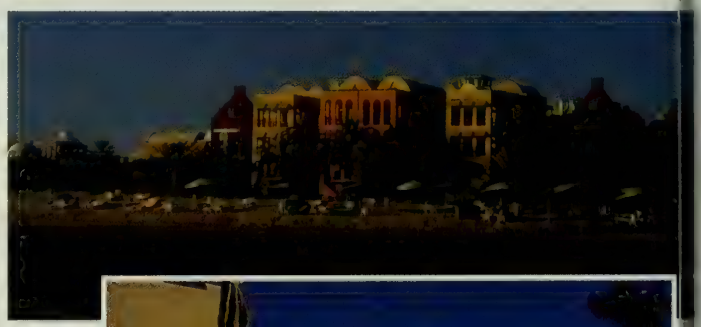
Evidently, contemporary architecture with an abstracted spirit of the past is what the Egyptian intelligentsia is looking for. The house earned the architects a commission to build the personal home (near the Khalifés) of one of the country's leading businessmen, Samih Sawiris, who gave Egypt El Gouna, a 7-square-mile town of holiday villas, hotels, and leisure facilities on the Red Sea. Like all developments, it is artificial; yet, unlike many, also idyllic. El Gouna is Sawiris's answer to the indiscriminate craze for construction that sounded the death toll for much of Egypt's coastline. It is environmentally conscious, low-rise, and attractive.

In today's Egypt, developers like Sawiris, involved in numerous projects across the country, can be a major influence. A household name, he is synonymous with big business and educated wealth.

Fortunately, Cairo's new suburbs are not exclusively the prerogative of the super-rich. Lower land prices on the outskirts have enabled the comfortably-off to build on what was once the desert. Residential developments dot the landscape, and major institutions have established themselves on accommodating premises away from the constraints of the inner city. Even the American University in Cairo, a landmark of the city center for close to a century, has chosen to move out to what is appropriately called "New Cairo".

In the studio of Ahmad Hamid Architects, a couple of designers are relentlessly streamlining an extended-family apartment building for New Cairo. And this is Modern stuff, not a scaled-down version of pop-star eclecticism. Hamid, a former pupil of Egypt's revolutionary master architect, Hassan Fathy, sees the current state of affairs as a result of the failure of the 1960s socialist idiom to provide a good life. "There was no continuum to the 1950s adequate middle-class home, so the new generations began to idealise the past. This created an urban expression with no real architecture, simply added 'architectural flavoring': You







Some worry that meticulous renovation in the historic Gamaliyya district (above) will strip it of its raw character and "Disney-fy" the city. A well-known new suburb, El Gouna (below two), mixes historicist styles with enlightened design. Many relish such building as indicative of the "good life," but others call them artificial.



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Boxy developments outside of Cairo (above). The building boom could spur architectural innovation, but few clients are interested in progressive design.

can have a Tuscan-villa-flavored building, or a Swiss-chalet-flavored building if you want. In acts of architectural transvestitism, some of our best Modern buildings have been remodeled to become Baroque- and Rococo-esque. What we need is a movement akin to what the Bauhaus was to Europe—an integrated socio-economic, architectural approach to urbanism that builds upon our own resources to provide something that's comfortable, sustainable, and attractively presented to the public."

Working with Fathy exposed Hamid to developing architectural solutions inspired by local culture and context. In Hamid's recent projects, tradition is expressed in the spatial modulation of his work. Asked about the compatibility of Modern architecture and Arab-Islamic culture, Hamid responds, "In essence, they both stem from the same principle of simplicity and reductionism. What did the Bedouin have apart from a camel, a shawl, a tent, and infinite space?"

It's not difficult to be convincing when you've got two decades of experience and speak in sound bites, as Hamid does.

Younger architects face tougher times. The low-rise residential nature of New Cairo has given them the chance to design their own buildings outside the context of a larger architectural office. But most clients really aren't interested in contemporary architecture; "modern living" only brings to mind the grim fiascos of profit-driven developers who built soulless tower blocks, cut corners, crammed people in, and in the long run made nobody happy. Ayman El Gohary, an architect with 10 years experience at Community Design Collaborative—the firm designing the buildings for the American University campus—and now working on his own projects, explains that there's often a difficult choice to be made between meeting clients' demands for a "classical-style" house and making a name for oneself as a young architect with talent. It's sometimes a no-win situation, since for every architect who sticks to his guns there are dozens willing to churn out anything to keep the client happy (read wanna-be Classicism, with proportions bad enough to leave Greece and Rome's most stoic marble statues in tears).

Good architecture thrives on challenges, and Cairo provides those. Finding housing solutions for a city of 20 million isn't easy. And the truth is, abandoning the city for the suburbs is like rushing for the lifeboats and finding them still tied to the ship, which isn't really sinking anyway. The time is right for some urban soul-searching, and a lot less escapism. Things may not be looking rosy, yet at least in design terms, Cairo's not a straightlaced place. Once all the kitsch has been exposed for what it is, there could be room for some serious architecture. ■



Illustrations courtesy of Lord, Aeck & Sargent

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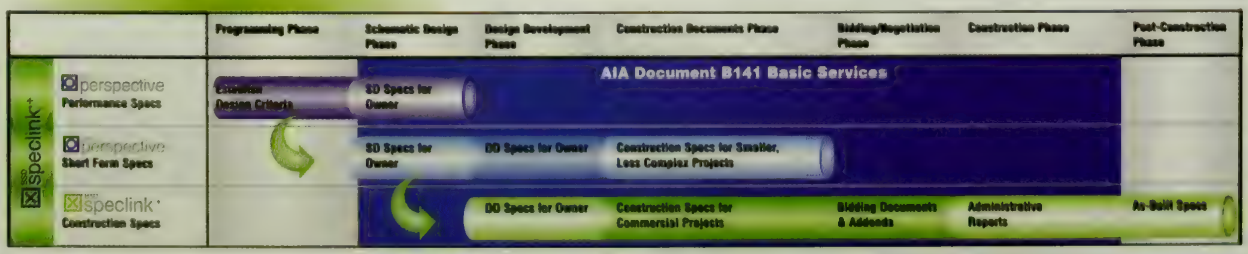
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Curiouser and curiouser: The strange case of the critic and the building

Critique

By Robert Campbell, FAIA

It's lazy summertime as I write this. Not a time for running around reporting on buildings. It's more a time for quiet reflection.

Here's one thought to chew on: What makes a great building? What is a "classic"?

Frank Kermode, who's often regarded as the greatest living literary critic in English, defines the classic in a surprising way. He says it's a work that can't be understood by any single internally coherent critical assessment. Every interpretation will fall short of fully comprehending it. There will always be something left over, something a little puzzling. That's how the classic remains alive. It stimulates each new generation to question it, to find a new way of seeing it. It's always demanding fresh interpretations because every one feels incomplete.

There are certain buildings that every generation feels a need to return to and reinterpret. The Tugendhat House. The Larkin Building. The Villa Stein at Garches. A classic is a building you can never quite get to the bottom of. If you ever thought you fully understood it, you'd begin to lose interest. It's the same with a poem. Another way of saying the same is this: When we ask whether a building, or any other work of art, is a classic, we are not asking only how good it is, we are asking how interesting it is.

I've always thought there are three criteria with which to measure the value of a work of architecture. It should be interesting, useful, and beautiful—in descending order. Interesting comes first.

Contributing editor Robert Campbell, FAIA, is the Pulitzer Prize–winning architecture critic of The Boston Globe.

When the scaffold falls away

Boston architect Gerhard Kallmann once expressed to me a similar idea about how interpretations change over time. An architect, he says, can't design without a theory. You need a set of beliefs. You can't make the pencil move without ideas. But the theories you use to design are like the scaffolding the contractor uses to get the building built. Once it is finished, the scaffolding falls away and the building stands alone. The theories that were necessary to its creation fall away, too, leaving the building naked, ready to be clothed, as the years pass, with entirely new theories and interpretations—interpretations that might astonish the original architect.

That buildings embody ideas is one of the things that makes them fascinating. But the ideas they embody change over time. As the critic Mark Wigley, now the new graduate architecture dean at Columbia, once put it: "The object makes redundant the theory that formed it."

Readers of this bimonthly column must know by now that I'm hopelessly literary. So here's another way of saying what Kallmann said. This is Emily Dickinson with her typically weird, notational, shorthand kind of poem:

The Props assist the House
Until the House is built
And then the Props withdraw
And adequate, erect,
The House support itself
And cease to recollect
The Auger and the Carpenter—
Just such a retrospect
Hath the perfected Life—
A past of Plank and Nail
And slowness—then the
Scaffolds drop
Affirming it a Soul.

I guess Dickinson's scaffolds are the physical human body that surrounds the soul. But buildings have souls, too. The thought is much the same.

Here's another slant on the issue of theory versus practice. Last year I held a fellowship at Columbia. There I happened to hear a talk by the university's president, Lee Bollinger. He wasn't talking to architects. He was talking to the School of Journalism. But I think what he said applies to architects, too.



Mies's Tugendhat House in Brno, Czech Republic, remains a classic after 74 years.

"Experts," said Bollinger, "think very deeply. As a result, they're always a little confused. The work of the journalist is to mediate between the confused expert and common sense."

Nothing could better describe the work of the architecture critic. Experts, God love them, are constantly wandering off the grid of common sense into realms of pure idea, pure theoretical principle, thus losing touch with anything that mat-

ters to anyone except themselves. When that happens, they begin to talk and write in ways nobody else understands. They use a language the real purpose of which is not to communicate, but rather to establish membership in a secret society of experts with private codes.

The great British novelist Doris Lessing puts it well in one of her autobiographies: "When principle is invoked, common sense flies out the window."

A two-way bridge

The critic tries to build a bridge of understanding between the general public, who possess what you hope, at least, is common sense, and the architectural experts, who may sometimes prefer the empyrean atmosphere of pure theory. It's a two-way bridge, of course. The public needs to learn from the experts at least as much as the experts need to learn from the public.

One more literary reference. I've always thought that a good model for any critic is Alice, the heroine of *Alice in Wonderland* and *Through the Looking-Glass*. Alice is constantly running into creatures who are crazy—the Queen of Hearts, the Mad Hatter, the White Rabbit—but they're crazy in a special way. They're obsessed by ideas, and they ignore real-world experience. They're trying to make ideas and concepts do the work of experience. It's a world of dysfunctional intellectuals who've lost touch with reality. Alice can't help seeing through them. She has the common sense of a conventional person who sees things as they are. No doubt this little Victorian girl is entirely too conventional. There's a place in the world for nuts and dreamers, of course. But the Alice books are a useful



Alice, like critics, runs into strange experts.

gloss on the folly of trying to live by ideas alone. Alice isn't fooled or overly impressed by her crazies, and neither should any critic be.

Does any reader doubt that architecture today has its share of White Rabbits and Mad Hatters (I'm not going to say who is which), dysfunctional intellectuals who prowl a lonely world of ideas, rather than the world of human experience?

As noted above, buildings are fascinating from the point of view of the ideas they embody. Its openness to new interpretations is one of the things that makes a building a classic. But when each generation's new scaffold of interpretation falls away, the building (or urban space, garden, or whatever it is) remains a place for human habitation. A building isn't primarily a text. It's primarily a place. And in evaluating its success as a place, common sense is still a pretty useful guide.

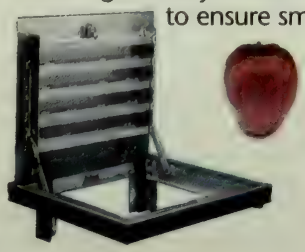
It's a critic's job to stay in touch with both the world of high ideas and the world of common sense and, as President Bollinger suggests, mediate between them—and hopefully, from time to time, introduce them to each other. ■

Are You Comparing Apples to Oranges?



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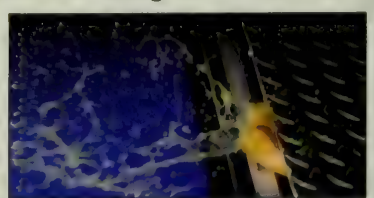
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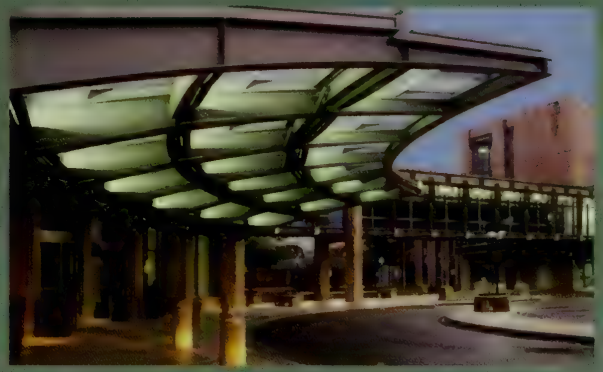
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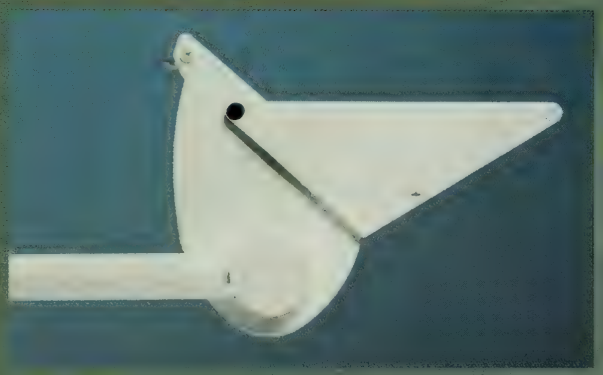
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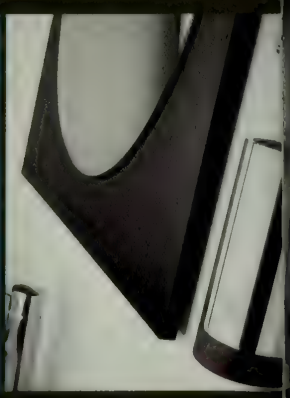












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Grounded: Looking to landscape and the garden as sources for architecture

Books

The City, Seen as a Garden of Ideas, *by Peter Cook. New York: The Monacelli Press, 2003, 188 pages, $65.*



In this age of slick CADD imagery, Peter Cook's architectural drawings are ebullient and willfully anachronistic. Like backdrops for the movie *Yellow Submarine*, they often feel cartoony rather than compelling. Yet as the glow of many of his contemporaries has faded, the designs of this self-described "futurist-optimist," who was a founder of England's Archigram group in 1960, may be more in vogue than ever. (Witness the fanfare surrounding his Kunsthaus in Graz, Austria, a museum that made the cover of RECORD in January and has a look that Cook likens to "a knobbly but sleek-skinned cocoon.")

This book, whose ostensible focus is 40 years of the architect's mostly unbuilt designs, offers some clues to Cook's ongoing relevance. There are fjordlike towers in Oslo and a bank in Hamburg with what seem to be lips for a cornice. But if his designs trade in whimsy, his take on reality is grounded: He's an uncommonly perceptive observer of the world around him, with a talent to translate impressions into prose.

Cook also understands, as few architects do, that over time major cities accrue a physical personality that is far more nuanced than what can be reduced to a set of design rules or a checklist of landmarks: "They drift and sag, they change internal patterns of allegiance. They dream up places of significance, often without the help of architects." And when architects do get involved? The result is the artificial urbanity now popping up in one affluent suburb after another: "They reproduce the tapestry, they keep the music sweet, like the elevator Muzak that you just recognize as Beethoven with the loud bits orchestrated out."

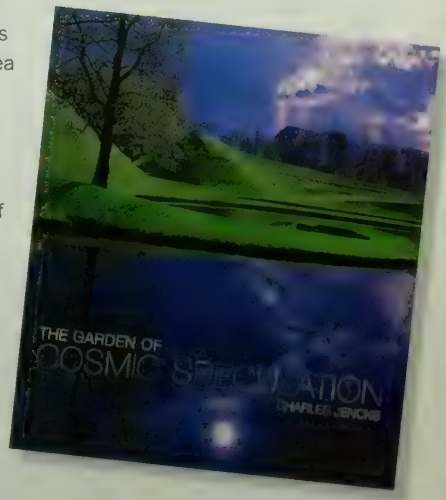
Now that technology can build the whimsy of the Graz Kunsthaus in sleek acrylic and glass, Cook seems determined to push even further toward fanciful polemics. He ends the book with "the city under the trees"—Super-Houston, a new vision for the sprawl beyond sprawl. It is Pop Art at regional scale, with feather-shaped "darts" looming over freeways and a multistory "liner" separating the sprawl from the outer countryside and housing that Cook promises will "be more Houston than Houston … schmockey [sic] in every way." Whatever. The impression that lasts is of the discerning urbanist, not the ironic provocateur—and that is what makes the book so good. *John King*

The Garden of Cosmic Speculation, *by Charles Jencks. London: Frances Lincoln, 2003, 256 pages, $60.*

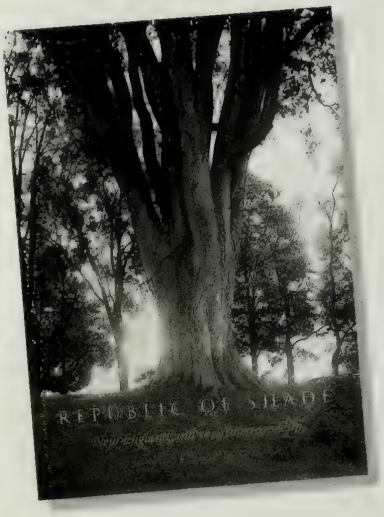
Charles Jencks likes going out on limbs. Twenty-five years ago, in his book *The Language of Post-Modern Architecture*, the designer, architecture critic, and provocateur dated the death of Modern architecture to 3:32 p.m. on July 15, 1972, when the Corbu-inspired Pruitt-Igoe housing development in St. Louis, deemed no longer habitable for its low-income tenants, was dynamited into history. Ten years ago, in *The Architecture of the Jumping Universe*, he advanced the intriguing, if still singular, polemic that contemporary architecture could be understood within the context of emerging ideas in complexity science and chaos theory. Now, in *The Garden of Cosmic Speculation*, he invites us to see how recent theories of cosmogenesis have been brought to life on 30 acres that he owns in the Borders area of Scotland.

The book weaves together with some success three disjunctive narratives: personal history, unfolding conceptions of the universe, and what Jencks calls "questioning design." *The Garden of Cosmic Speculation*, begun by Jencks and his late wife Maggie Keswick in the late 1980s, initially expressed ideas about geomancy inspired by Keswick's lifetime study of Chinese gardens. As later elaborated by Jencks in the years since Keswick's death in 1995, the garden has become a "miniaturization and celebration" of patterns now seen to underlie all life, including the self-organizing spirals of human DNA, hurricanes, and galaxies; the self-similar shapes of waves and clouds; and the irregular geometries of fractals and black holes. Jencks presents the various ways these ideas have been given expression in landforms and sculptures in his garden, in the conviction that scientific discoveries can't be broadly assimilated into culture until given visual form. One long section of the book, for instance, tells how he designed a "universe cascade" with platforms and steps to suggest the sudden jumps to ever-higher levels of complexity that characterize the history of the cosmos.

As intertwined personal and intellectual narratives and as self-conscious explorations of the way scientific theory might impel design,



both Jencks's garden and book are deeply anomalous in the context of contemporary design. Though they strain at times to illustrate ideas almost beyond the limits of visual representation (who should paint the face of God?), both landscape and text are Jencks at his provocative best, scanning science for an iconography suitable to the new cosmology. *John Beardsley*



Republic of Shade: New England and the American Elm, *by Thomas J. Campanella. New Haven and London: Yale University Press, 2003, 240 pages, $35.*

"Smaller plants may feed and sustain us, but in trees we see ourselves," writes Thomas Campanella in the introduction to his cultural history of the American elm. In tracing the rise of *Ulmus americana* from scrappy bottomland survivor to national icon, Campanella introduces a tree with a Horatio Alger trajectory and a boundless capacity to reflect America's democratic zeal and self-improving aspirations.

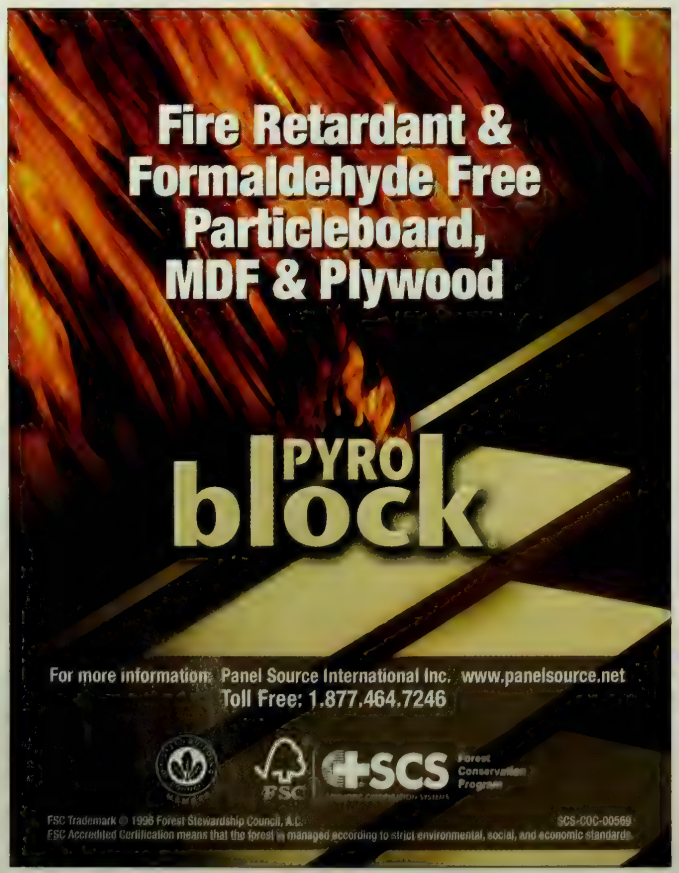
When Europeans arrived in the New World, the American elm dominated New England's soggy lowlands, where it had survived the fires native people used to clear terrain. Though its bark yielded medicinal benefits, the elm's stringy wood made it useless for building, and it was backbreaking for the settlers to cut. Spared the ax, and often planted in pairs in front of new homesteads, towering elms became the most visible feature of the early New England farm landscape. The stage was set for iconic status: "In time," Campanella writes, "this remnant of the native forest emerged as the very essence of Yankee pastoralism."

Because the elm thrived in river valleys, which also offered the best farmland, the tree's ascendancy followed the region's central river systems: the Housatonic, the Merrimac, and the Connecticut. Between the 18th and early 20th centuries, the cult of the elm spread from southern New England to the rest of the nation.

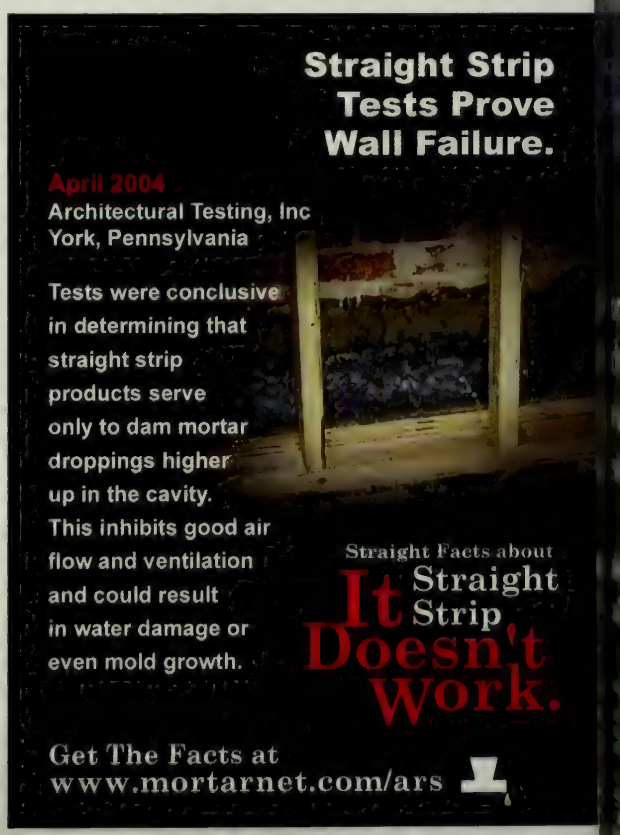
This proliferation was spurred by the village-improvement movement of the 1850s, which enshrined the elm-lined street in America's towns and cities. Like many other Yankee exports—the Cape Cod house, the village green, the white church spire—the elm came to symbolize conquest of the wilderness, domesticity, democracy, and all their attendant moral virtues. It also bestowed architectural order and scale, shade and shelter.

The elm's long reign came to a crashing end with the arrival of Dutch elm disease in the 1930s. This "fungal interloper," spread by the elm bark beetle, decimated America's elms and streetscapes by the 1970s. Campanella reminds us that pest-fighting sprays exposed elms to copious amounts of DDT, giving rise to an even greater ecological disaster. In an epilogue, he documents lessons learned from the pandemic, the research to develop disease-resistant varieties of *Ulmus americana*, and the movement to restore hardier elms to city streets.

Republic of Shade is grace-

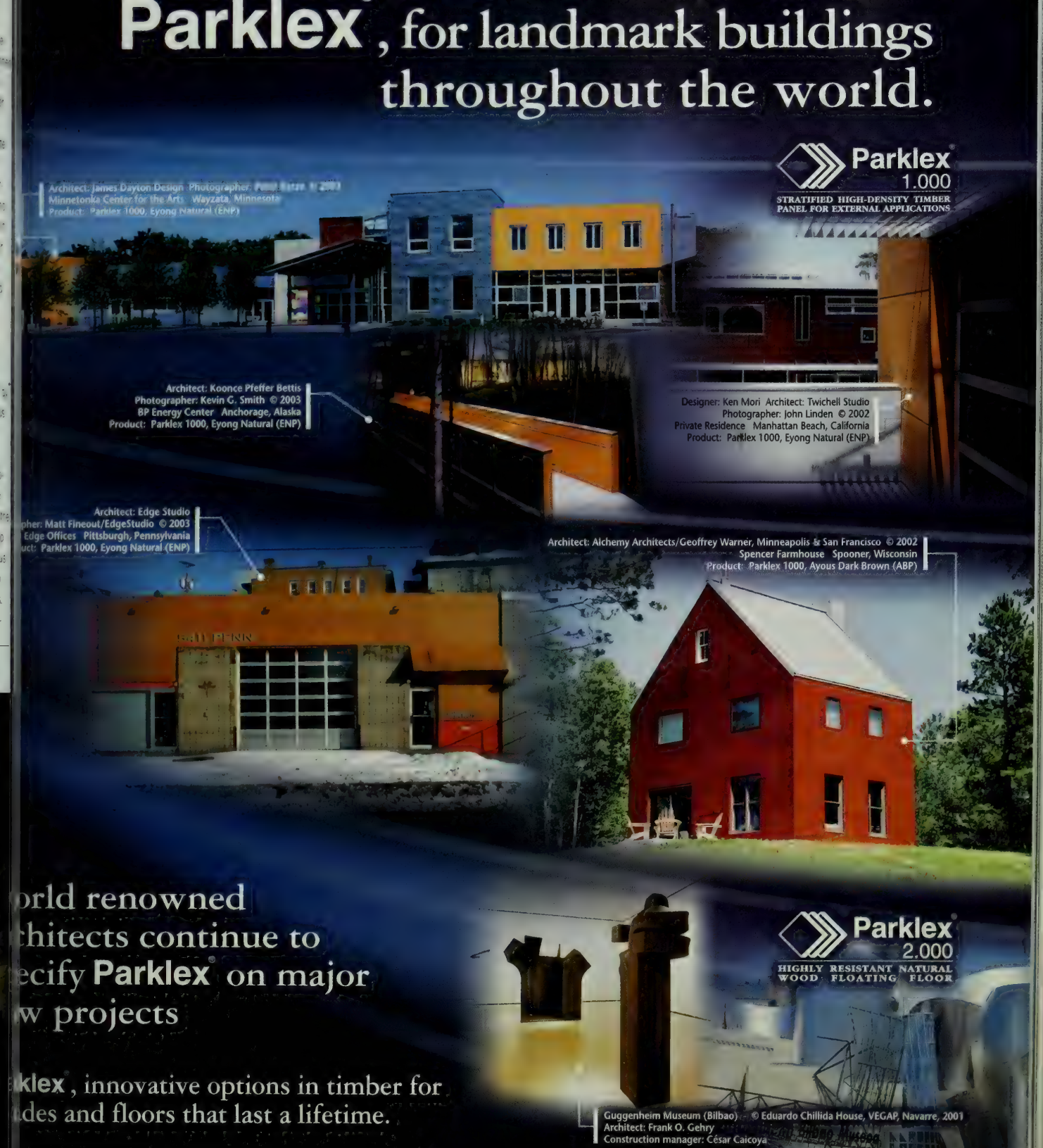


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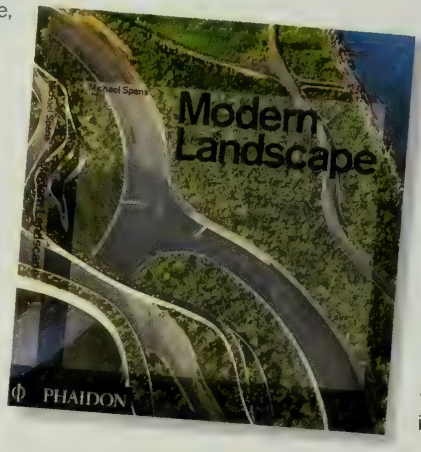
fully written, elegantly designed, and Campanella's annotated text is illustrated with dozens of historic photographs. Above all, *Republic of Shade* gives form and substance to the elusive concept of cultural landscape history. Campanella illuminates beliefs and yearnings that extend to far more than America's love affair with elms, and his fascinating book deserves an audience as broad and enduring. *Jane Roy Brown*

Modern Landscape, *by Michael Spens. London: Phaidon Press, 2003, 240 pages, $75.*

Increasing urbanization and concerns about sustainability have spawned growing interest in landscape design. At the same time, author Michael Spens insists there has been "little new discussion on the subject." That's one reason why landscape architecture deserves the kind of careful scrutiny that Spens aspires to give it in *Modern Landscape*. An architectural writer currently teaching at the University of Dundee, Scotland, Spens has written monographs on Geoffrey Jellicoe and Alvar Aalto. *Modern Landscapes* presents 32 carefully selected projects in four categories: parkland, architecture as landscape, garden landscapes, and urban interventions.

Spens examines significant new ventures in landscape architecture, including efforts to improve infrastructure (Danadjieva & Koenig Associates' West Point Wastewater Treatment Plant in Seattle), reclaim abandoned industrial sites (Peter Latz & Partners' Landscape Park in Duisburg-Nord, Germany), and generate new urban design typologies (West 8's Borneo Sporenburg Housing in Amsterdam). At the same time, he acknowledges the continuing vitality of more traditional garden forms. Beautifully produced, his book is international in scope; it even includes Japanese projects by Toru Mitani and Hiroki Hasegawa of Studio on Site, Tokyo.

But apart from informative project descriptions, his book does not add much to the discourse. His larger conceptual framework is remarkably weak. Spens describes Modernism as a "timeless category," though others would call it a historical episode. He conveys little clear sense of what he means by Modern landscape, other than to suggest that it is vaguely linked to notions of scientific and social progress and inspired by art, from Cubism to Minimalism and Land Art. Indeed, he turns to a distinctly premodern concept for guidance: "It is to Arcadia … that we look in this new century for the possibility of fulfillment." His discussion of architecture-as-landscape is overly reliant on a notion of place-form; it falls far short of the analysis found in Anita Berrizbeitia's and Linda Pollock's book *Inside Outside: Between Architecture and Landscape* (1999). Spens could also have used a more careful edit: In his introduction, for instance, he misspells the names of Isamu Noguchi and Bernard Tschumi. Landscape architecture deserves better than it gets in this book. *J.B.*

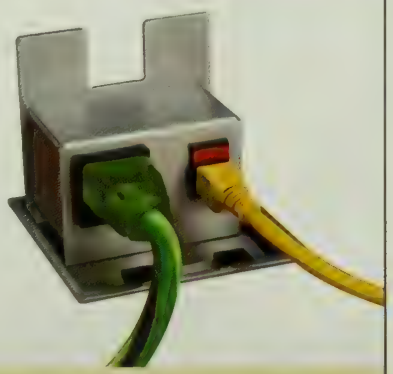


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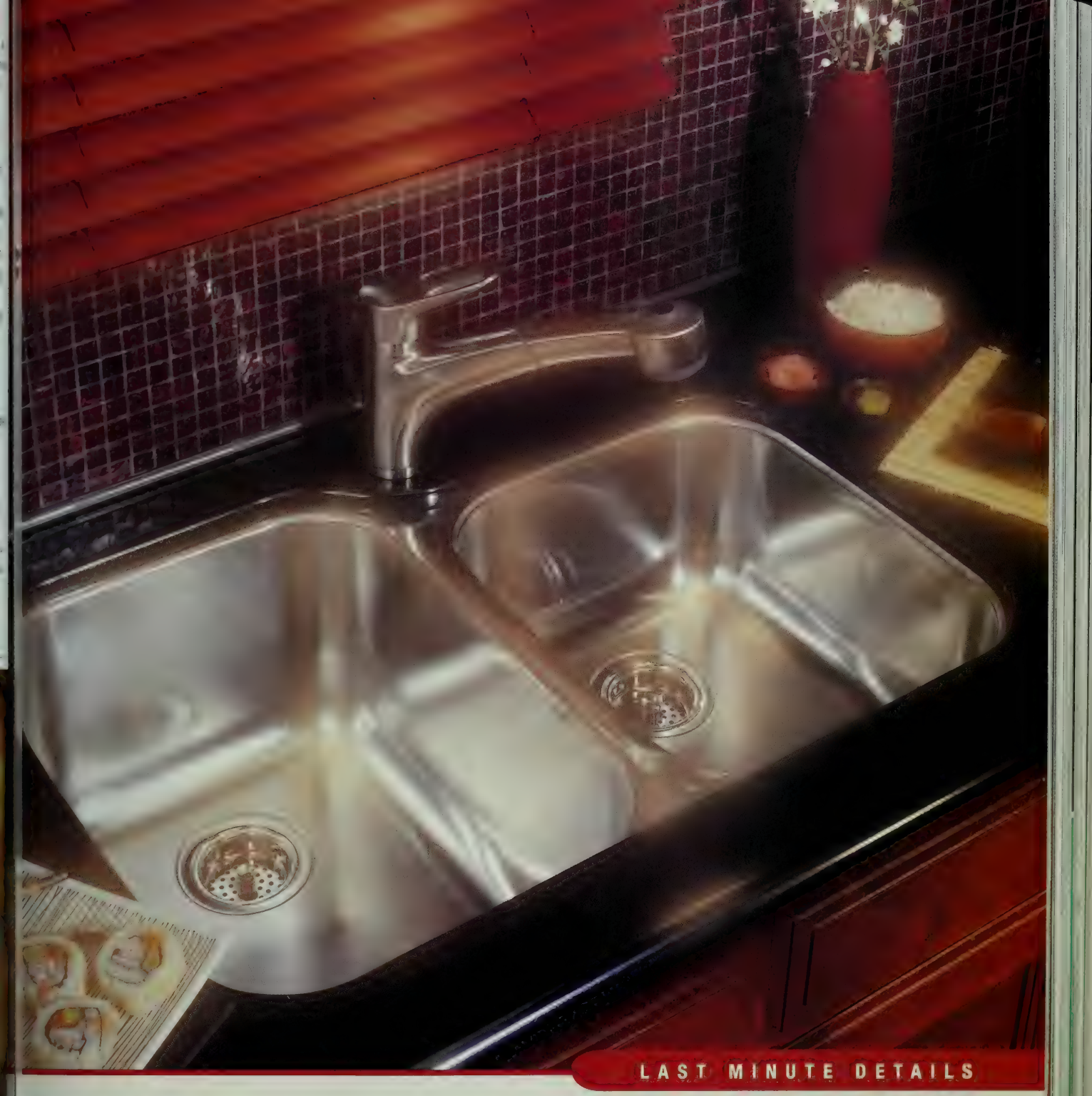
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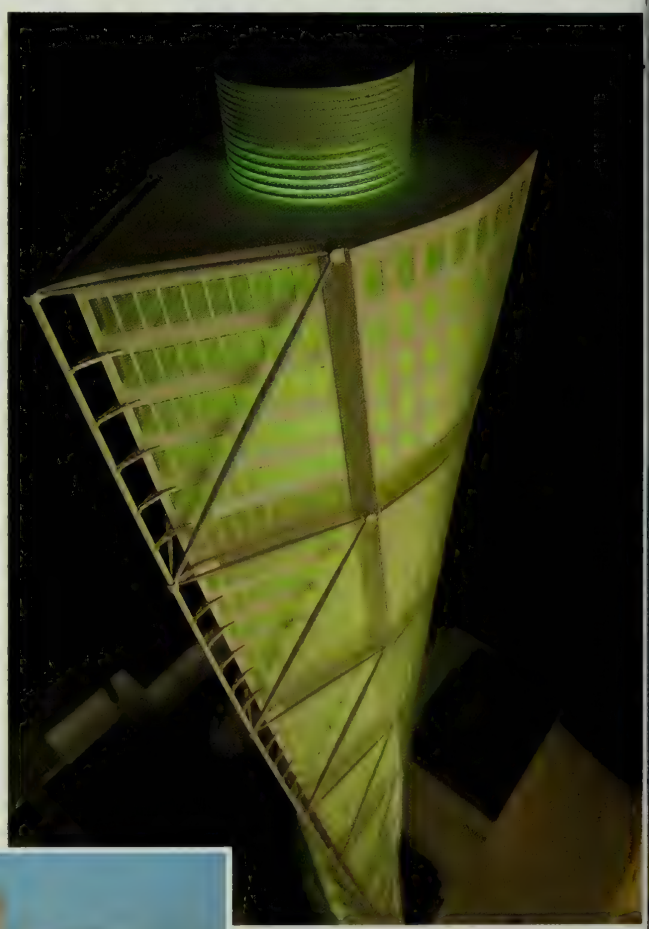
By Deborah Snoonian, P.E.

Tall Buildings. *Curated by Terence Riley and Guy Nordenson. At The Museum of Modern Art, Queens, New York, through September 27, 2004.*

In Steven Millhauser's 1997 Pulitzer Prize–winning novel *Martin Dressler*, the title character, who evolves from bellboy at an upscale Manhattan hotel to renowned developer in the early 20th century, admires a view of the city from the roof garden of his flagship hotel—"a world of open pits and blasted rock … [where] the avenues had begun to erupt in strange, immense growths: modern flowers with veins of steel, bursting out of bedrock." Such fervor still surrounds skyscrapers today. Tall buildings are not going away, as the post-9/11 nattering might have had it—they're being erected in more cities than ever. MoMA's exhibition *Tall Buildings* pays homage to height, featuring 25 built and unbuilt projects from the past decade.

The curators, MoMA's Terence Riley and structural engineer Guy Nordenson, chose projects that speak to the themes of technology, urbanism, and program. Of these, technology seems first among equals. With complex analyses of structure just a few mouse clicks away, architects and engineers have envisioned buildings that twist, lean, and warp their way into space; many also feature the increasingly popular "diagrid" facade, with structural members that deviate from the horizontal and vertical to provide





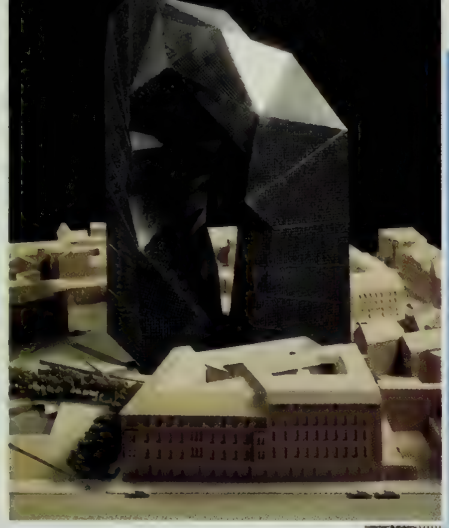


Richard Rogers's proposed tower for Korea (far left) comprises preassembled components for affordable housing. Diagonal bracing resists torsion at the Edificio Manantiales (left) in Chile, by Luis Izquierdo, et al. Calatrava's Turning Torso (above) in Sweden, rotates 90 degrees in a rise of 523 feet.

lateral and torsional stability. Designers such as Norman Foster (Swiss Re, London) and Ken Yeang (the unbuilt Elephant and Castle Eco Towers, also in London) harness tech savvy in the service of resource efficiency, analyzing wind patterns, sunlight, and air circulation to create skyscrapers with interior gardens, natural ventilation, and ample daylight. Powerful PCs and cheap software have put once-impossible design feats within reach.

Aside from the tech angle, the exhibition may frustrate those who want to learn how the buildings relate to one another. Whereas the show's excellent Web site enables these comparisons, the gallery layout encourages individual browsing, not collective reflection. Projects are grouped by actual building height, which makes little sense because the physical models are all roughly the same size. Grouping by theme or even form would have been more instructive. Something's gained by pairing, say, Eisenman's unbuilt Max Reinhardt Haus in Berlin (top right) and Rem Koolhaas's CCTV building in Beijing—both "loops" that connect at the lowest and highest levels—and learning that their structural systems are different.

Tall Buildings is a New York show, born out of conversations that followed the destruction of the Twin Towers. The absence of the final plan for the Freedom Tower, both striking and understandable, underscores how contentious its design has become. And to see a few of the entries here by finalists for the competition is to realize anew the power of their metaphors. Each of the three schemes shown proposed multiple towers whose structural integrity depended on horizontal connections among them. Stronger together than apart, in other words—a feature that resonates with a city whose denizens are still coming to grips with loss. ■





Peter Eisenman conceived the Max Reinhardt Haus (above) in the early 1990s as a symbol of unity for a new Berlin. Renzo Piano's spirelike London Bridge Tower (right) is one of several high-rises planned for a city once hostile to skyscrapers.

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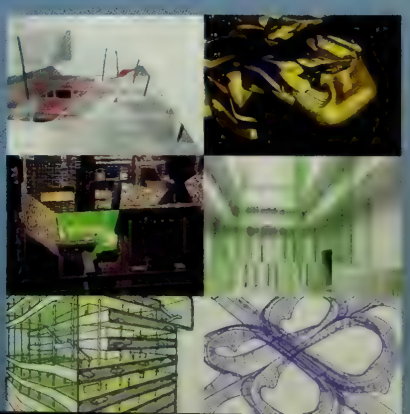
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Snapshot



By Sara Hart

Sheer walls (and fixtures) evoke a ghostly architecture

Korean-born Do-Ho Suh is an artist of unusual range. His site-specific installations focus on many subjects—cultural identity, ethnic values, collective consciousness—in a variety of media, including resin, fabric, thread, and rubber. Because he lives in two cities and two cultures, the United States and South Korea, he seems to struggle with the psychic vertigo that the culture shock brings him. A part-time New York resident, he exhibits his installations around this country but fabricates most of the pieces in his other home, Seoul. As someone of two worlds, Suh has found a way to transport a facsimile of the place he's left to the place he currently occupies.

In 1999, the artist began making full-size replicas of his dwellings in Seoul and New York. He recreated every detail and fixture—toilets, light switches, cabinetry, bookshelves, and even appliances. In architectural parlance, these structures might be called 3D as-builts, but usually such pieces merely represent the existing reality of a place. Suh, by contrast, has invented a parallel universe out of translucent fabric.

Snapshot

348 West 22nd St., Apt. A (2001) is the full-scale replica of Suh's apartment in Manhattan's Chelsea neighborhood. First, he measured and recorded the entire place. Then he devised sewing patterns, from which seamstresses in Seoul fabricated every element in the apartment out of gray nylon.

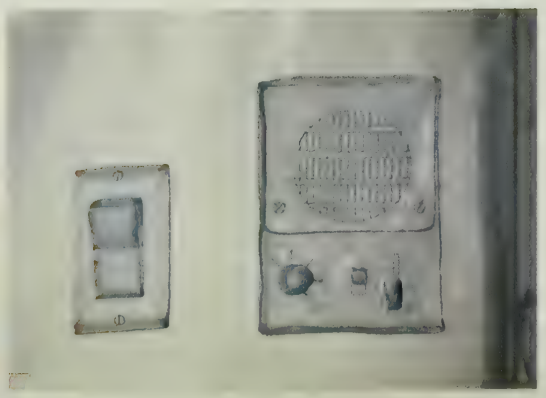
The experience is not unlike some dream sequence in which reality—in this case, the reality of structure, material, and texture—has been drained, leaving only a gauzy, ghostly memory. Some visitors, especially architects, will find *Apt. A*'s interiors limp, sad, and vulnerable. Others will simply immerse themselves in the hallucination. Fortunately, the floor retains its solidity and strength, grounding the experience and reminding visitors that the dream is, in fact, an art installation. The work remains an intellectual commentary on the psychological comfort of familiarity.

Suh's other similar investigations are perhaps more sensual and less haunting. He also stitched a likeness of his childhood home in Seoul in green silk organza and made *Staircase* (2003), a red nylon interpretation of 348 West 22nd Street's stair, currently on view at the Arthur M. Sackler Gallery in Washington, D.C. (through September 26). *Staircase* dangles from the ceiling, hovering inches above the floor. It is more sculptural than spatial, which by comparison makes *Apt. A* all the more visceral. ■



Every element of Do-Ho Suh's Chelsea apartment is recreated full-scale and in a gray nylon—plumbing fixtures, wall plates, and the bathtub.







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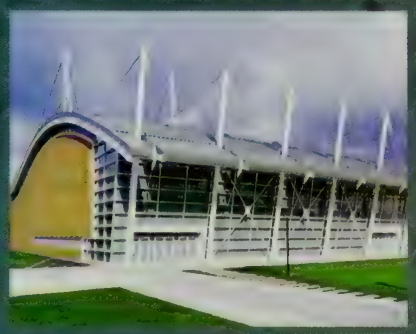
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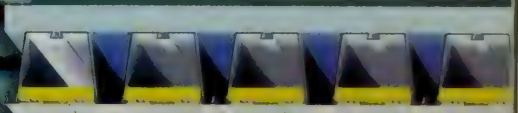
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Shallow Space

The Art of Dressing Windows

By Thomas Hine

Store windows are shallow, unreal rooms inhabited by petulant mannequins. But show-window display is much, much more than interior design for dummies.

For more than a century, it has been a major cultural force that shaped people's experience in the modern city. And today, even though imaginatively designed windows play only a small role in a world of big-box stores, shopping malls, and global chains, window designers continue to provide unexpected angles, provocative views, ambiguous tableaux, and fresh attitudes that draw passersby into their stores, and

Thomas Hine, an architecture critic, is the author of I Want That! How We All Became Shoppers *(HarperCollins, 2000).*



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Bergdorf Goodman's Holiday 2000 window, designed by director of windows David Hoey, exploits forced perspective and lots of paper to render a three-dimensional world of ice.





Small-scale artifacts are used to yield remarkable large-scale effects. In the summer of 2000, Bergdorf's David Hoey created a wall of pieces of toast for the store windows (left). Last spring, he formed a floor-to-ceiling bas-relief out of wigs and hair accessories (opposite). Another window (below left) shifts scale with a giant photo of a wig.

more important, into the spectacle of the moment. In parts of Manhattan, Paris, Tokyo, London, and a few other cities, store windows remain beacons of style, color, and compositional ideas.

Window design is a labor-intensive, improvisatory craft whose practitioners are part artist, part tailor, part collector, part editor, always on top of the latest sensation. They must come up with new ideas constantly. At New York City's Bergdorf Goodman, for example, a staff of five, headed by the director of windows, David Hoey, and augmented by an extensive network of freelancers, designs and installs 350 different scenes each year. Generally, each one stays up for one to three weeks. "Bergdorf's, over time, has developed a certain character," says Linda Fargo, vice president for visual presentation and image at the store, "and in the windows, we express and explore that, and sometimes push it in new directions. The store's windows are like a person's eyes, the first thing you look at."

Bergdorf's uses every trick in the art history book, from Baroque flamboyance to stark Minimalism, to draw the public into its materialist reveries. Sometimes the installations even shift gravity, giving an observer bird's-eye views of the opulent life that show both the pleasures of indulgence and the resulting hangover. A few blocks away, at Barneys New York, on Madison Avenue, the vitrines are often virtual oratorios of clutter, filled with merchandise, flea-market finds, photographs, and text written on the glass. These artfully composed sets designed by the store's creative director, Simon Doonan, tell viewers what they already know: They have too much stuff, but having more stuff is really cool.

Store windows are in one sense interiors, simply because they are within the envelope of the building. But as they tempt pedestrians into becoming voyeurs, they are also of the street, often doubling the images of surrounding buildings, traffic, and crowds.

The glazing becomes a mirror that draws you through the looking glass. Can you see yourself in these clothes, carrying that bag, wearing those shoes? Indeed, your reflection asks whether you can envision yourself as part of the world depicted across the pane. In an increasingly branded and global market, the seemingly primitive device of the showcase also gives a retailer a subtle way of defining itself this week, in this neighborhood, for these people.

You may well find the scene in the window to be repulsive or cruel, as at Barneys New York recently, where the word *Joy* was dramatized by mannequins in hooded Issey Miyake raincoats pushing each other to the ground. For the upscale specialty stores that present the







David Hoey worked with layering, scale, and collage for a Bergdorf's window in the summer of 2001 featuring a newsprint dress (top). When the shoe salon opened the following summer, Hoey hung the enlarged floor plan as a backdrop in a window, and mounted mannequins and objects (left) in a play on axonometric perspective.

most exciting concepts, such dissonance is entirely intentional. As Simon Doonan has put it, "Snotty and esoteric windows can close the door to unwanted pedestrians and snuff out undesirable desire. If that doesn't work, get a buzzer."

Gene Moore, who first designed windows for Bonwit Teller in New York, and then for 36 years at Tiffany, and is probably the most influential designer in this field, said that windows must "abrade the awareness of the audience." He achieved this most often at Tiffany by contrasting humble materials and rough surfaces with precious objects. He threw jewels into sand and hung diamond rings on a rope. Another designer, Candy Pratts Price, brought a distinctive face to Bloomingdale's Manhattan store in the 1970s. Like a comic strip, her windows told stories reflecting the sexual mores and drug use of the time and accomplished a feat that hasn't been repeated: making a department store appear exciting to the young.

The spaces in which window designers work are often awkward and constrained, with dimensions that are high, wide, and shallow. At Bergdorf's, for example, where the prime cases measure 12 feet high by only 4 feet deep, the store's signature move is to create seemingly deep and complex compositions within that compressed space. These solutions often depend on a painted background that gives an illusion of depth, with a few elements, such as a building or piece of furniture, shown in shallow relief. And although, as in a Bergdorf's Holiday 2000 window (see opening spread), where the draperies, angel's wings, chandeliers, human limbs, and other elements seem almost to be caught in mid-explosion, the mostly paper display is actually conceived as a series of distinctly lighted layers. It conjures a world in which the everyday rules of physics have somehow been suspended. A diagonal, lancelike element breaks through these planes as it juts through the mirror frame and establishes a forced perspective, while evoking a peculiarly upscale Annunciation.

Lighting is one of the principal tools designers have for creating a sense of space and depth, but because store windows are most often seen in changing conditions of daylight, their illumination is difficult to control. Even though designers can use a splash or two of colored light to bring a scene alive on a sunny day, the opportunities to vary lighting are far more limited in this case than they are in theater sets or museum dioramas.

As early as the 16th century, artisans and cloth merchants in some European cities decorated their shops by placing items in the windows. However, the storefront display window as we know it depended on



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In the Holiday 2000 windows at Barneys New York, the creative director, Simon Doonan, evoked the prevailing styles of the prior 50 years. For the 1960s, when Op Art reigned, he exploited the optical effect of pattern (above left). In a Tiffany window for Christmas 1955 (below), Gene Moore posed fun uses for deer antlers.

several 19th-century developments, including the economical production of plate glass, the introduction of ready-to-wear clothing, and the invention of the department store. By the 1880s, especially in American cities, stores featured large vitrines filled with a variety of merchandise arranged in complex geometric patterns.

But the spark that led to the modern store window was the introduction of the mannequin in Paris in the 1890s. The early, heavy wax figures, with realistic glass eyes and real human hair, look creepy today, but it was immediately evident that they could bring a whole new kind of drama to the American Main Street.

In this country, people looked to department stores to tell them how to live. Immigrants peered through shop windows for lessons about how to be middle class. At many stores, the back walls of the display spaces were paneled in classically detailed oak, which was suitable for scenes in suburban mansions, Ivy League common rooms, and exclusive clubs. In Chicago in the early 1900s, crowds used to gather outside Marshall Field waiting for the week's new window to be unveiled. Windows helped establish commercialism as an important element of community life, especially at Christmas. Just about every department store in the country drew crowds of spectators by increasing the window budget and creating popular attractions—a ritual that continues in many cities today.

One who was fascinated by the possibilities of this development was L. Frank Baum, who in 1897, a couple of years before he began writing the book *The Wizard of Oz*, founded the magazine *The Show Window*, the first publication about retail display. Amid technical articles, he included more personal reveries, including one in which bronze statues in the park lust after the gorgeous mannequin on view in the shopfront.

This element of fantasy and eros has persisted for more than a century. For Marcel Duchamp in 1913, gazing through a store window at a desirable object was "coition through a sheet of glass." The French term for window shopping is "*lécher les vitrines*," lick the showcases.

In 1939, Salvador Dali, who had earlier brought Surrealism to Fifth Avenue in some windows for Bonwit Teller, created *Narcissus White*, which featured a fur-covered bathtub from which hands emerged, holding mirrors. While it was being installed, the bathtub, in an apparent accident, crashed through the glass, and Dali jumped through right behind it. This window, which was not repaired, was never photographed, although it may be the most famous shop installation in history.

Many artists have done store treatments. Some, like Andy Warhol, have proudly used their own names,



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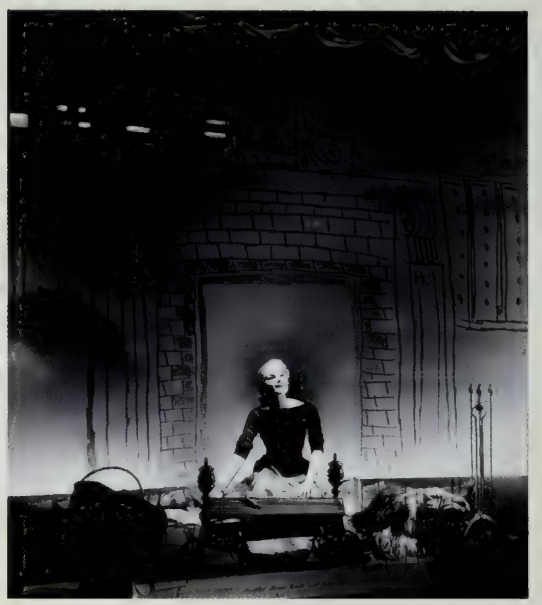
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As compositional devices, linearity and flat planes can augment space in a shallow window. Andy Warhol exploited them around 1955 for Bonwit Teller in Manhattan (top left and right). David Hoey's wire-hanger window done for Bergdorf's in the summer of 2000 (left) created a three-dimensional world out of linear elements.

and others, like Jasper Johns and Robert Rauschenberg, working as a team for Bonwit Teller in the mid-1950s, have preferred to take a pseudonym (here, Matson-Jones). During the 1920s, store windows also helped launch the careers of such important industrial designers as Norman Bel Geddes, Donald Deskey, and Raymond Loewy, who two decades later would adapt the department store to the suburbs.

But while architects have created important store buildings—for example, Louis Sullivan's Carson Pirie Scott in Chicago, Daniel Burnham's Marshall Field in Chicago and John Wanamaker in Philadelphia, and Victor Horta's L'Innovation in Brussels—few have been interested in windows per se. (Although, according to his close associate Amédée Ozenfant, Le Corbusier thought "window-dressing is an important factor in … town planning." He was of the belief that window dressing was becoming increasingly rational, an observation for which there was scant evidence.)

An architect who did throw himself whole heartedly into window design was Frederick Keisler. He argued that while schools and museums had been responsible for introducing Modernist ideas in Europe, in America this job was being undertaken by the department store. In 1925, he designed a glass-walled spiral department store, a sort of proto-Guggenheim that offered 20 floors of continuous selling space. And in 1928, commissioned by Saks Fifth Avenue, he removed the windows' oak side



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For Christmas 1997, Bergdorf's vice president for visual presentation and image, Linda Fargo, fabricated an accretion of intricately tangled leaves, fruit, and branches (left) to create an illusion of depth. In the store's fall 1999 window, David Hoey's wall of cotton fiber took the textural into a tectonic realm.

walls and created a selling space according to Modernist principles. He claimed to have been the first to have broken out of a classically representational sort of merchandising, in which shoes were placed low, hats high, and belts somewhere in the middle.

Like Geddes, who was working about the same time for Franklin Simon in New York, Keisler hoped to introduce a system of window display. Neither succeeded; system implies pattern, which in turn implies predictability. But the audience for show windows is like the figure in one of Gene Moore's installations who liked hats so much she sprouted an extra head. People want the new, the irrational, the amazing.

On a recent stroll in New York, one could see robots on surfboards; well-dressed mannequins menaced by giant, multicolored dung beetles; and figures seeming to emerge from layers of ancient wallpaper. But outside of a few major cities, such imaginative displays are rare. The consolidations and bankruptcies in the department store industry that began in the 1980s have made it unlikely that any department store chain will be as daring as it was in the past.

Overall, the greatest threats to this art form are the loss of pedestrian traffic in cities, the decline of the department store, and the rise of merchants who do not see such localized, handmade creations as part of their brand strategy. Even merchants doing business out of downtown stores that once offered imaginative showcases do not use their displays aggressively, because their style is set in malls where most stores don't even have windows. And while so-called lifestyle centers with outdoor public areas are the latest trend in retail development, the stores in such centers rarely do window display, relying instead on posters and graphics that are tied to the chains' advertising campaigns.

"Many retailers are simply willing to stick anything in the window; they don't recognize the power windows have," says Bergdorf's Linda Fargo. One result is that few people get to see good examples, and the number who want to do them is dwindling. Most retailers concentrate their efforts inside the stores. A few retailers, most notoriously Prada, have sought to use celebrated international architects to express their brand identity. Prada's new store on Rodeo Drive in Beverly Hills, designed by Rem Koolhaas, eliminates the storefront shop window and substitutes a wall of air.

"Window display may be, as people say, a dying field," says Janet Wordley, head of visual merchandising for Harvey Nichols, an English specialty store chain whose shop on London's Knightsbridge is known for its windows. "But it seems as if it has been dying for years and years. For those of us who get to do it, this sense gives us a little more license to be experimental." ■

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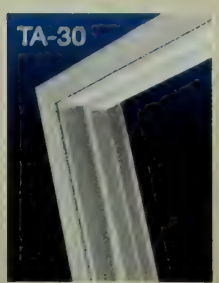




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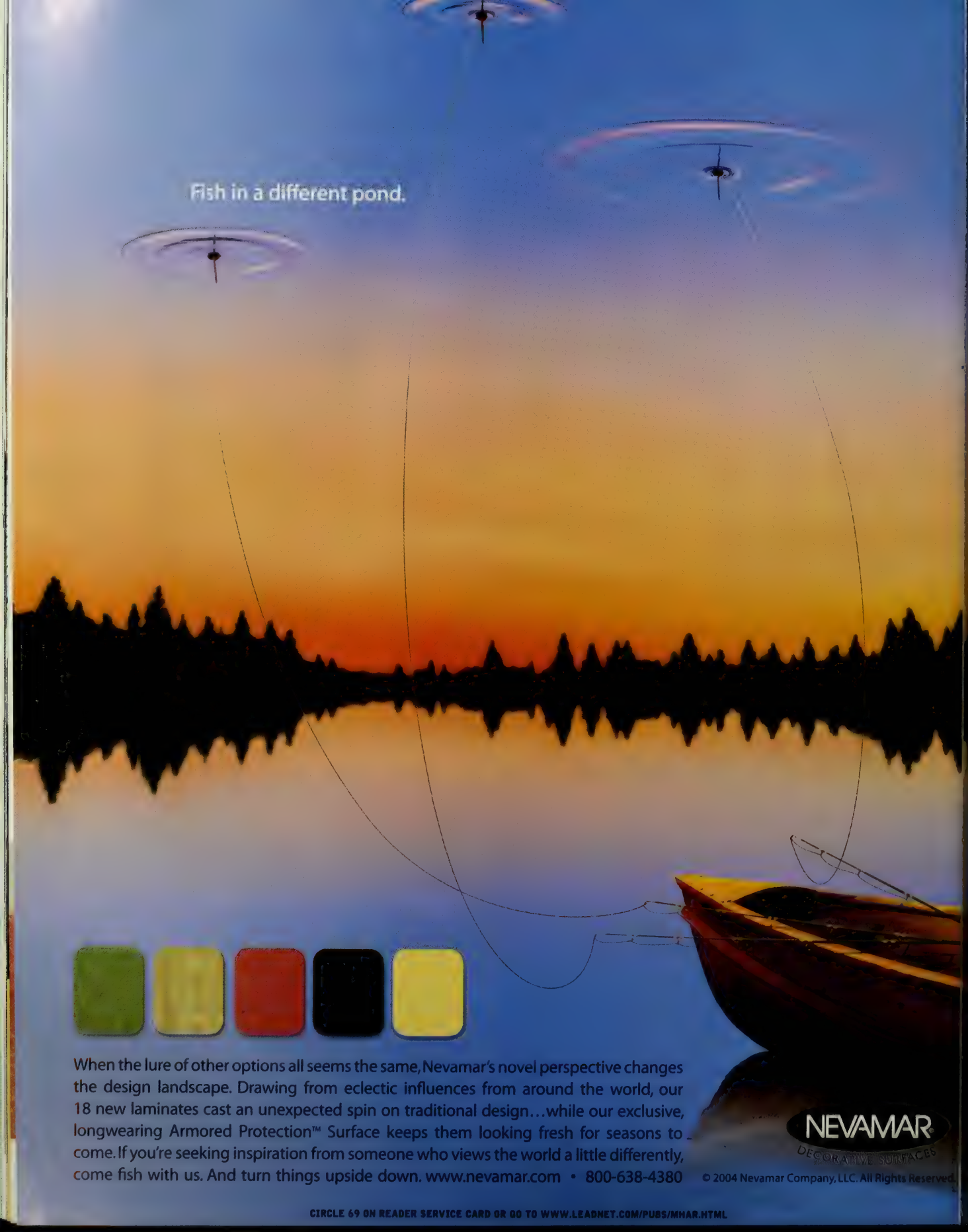
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Record Interiors 2004

If life gets its spice from variety, then this year's Record Interiors serves up a real palate sparker. The 2004 interiors include a savory array of functions, forms, and venues, ranging from a holistic pharmacy in Amsterdam to a cultural center in Warsaw; a sound studio in Los Angeles; a university mathematics department in Hamilton, Ontario; a café and a small museum in New York City; and a hotel in Berlin.

The architectural sensibilities and design approaches are as varied, or highly seasoned, as the programs and sites themselves. At the Ini Ani Coffee Shop in New York, for example, Lewis.Tsurumaki.Lewis gives unexpected elegance to commonplace, typically throw-away materials—corrugated cardboard and coffee-cup lids—while at the Skyscraper Museum, just a short distance away, SOM explores mirrors and architectural sleight-of-hand to achieve the illusion of infinite verticality within a low, horizontal space. And whereas Studio 0.10 deftly plays sleek, curvy Minimalist wall planes against the rough-hewn floors and ceilings of AZLA sound studios in Los Angeles, Kulczynski Architects consciously preserves industrial grit almost universally throughout Warsaw's Fabryka Trzciny cultural center.

1. Concrete
2. Lewis.Tsurumaki.Lewis
3. SOM
4. Graft
5. Studio 0.10
6. Kulczynski Architects
7. KPMB

Many of the featured projects establish a strong counterpoint between inside and out, but do so in markedly different ways. At the James Stewart Centre for Mathematics at Hamilton University in Ontario, for instance, KPMB sets up a constant interplay between the structure's neo-Gothic exterior and its now stripped-down, highly planar Modernist interior, allowing pointed arches and ornate ironwork to cast poetic shadows across crisp, new surfaces. By contrast, the interior of Q!, the Berlin hotel, seems more like an exotic animal, caged within the building's outer walls. Here, Graft architects fills an existing, rigidly boxy gray shell with a sculpturally fluid interior of folded planes. Vivid glimpses of the lobby, suffused in deep red, appear from the outside. Inside, conventional restraints—so dominant on the facade—cut loose as walls flow seamlessly into ceilings, furniture, or floors and, in guest rooms, beds, and bathtubs, meld together.

Finally, at De Lairesse Apotheek in Amsterdam, the design by Concrete balances one expression of calm against another. The architects expanded the entryway of a plain, subdued 1920s brick facade to reveal the pristine and luminous translucencies of its new interior. With clean-lined glass cabinets arranged in an embracing arc, images of ginkgo leaves on the floor, and gently glowing panels printed with the periodic table, Concrete fashioned the space to convey serenity and wellness. In quiet contrast to its brick shell, the interior produces no extreme jolt.

Though the seven featured projects appear undeniably diverse, each one, in its own way, immerses its users in a distinctive milieu. Whether it's a café lined in rippled, mocha-colored cardboard, a modest museum of deceptively dizzying heights, a cultural center with a well-seasoned industrial patina, or any of the rest, we invite you to turn the page—and partake. *Sarah Amelar*

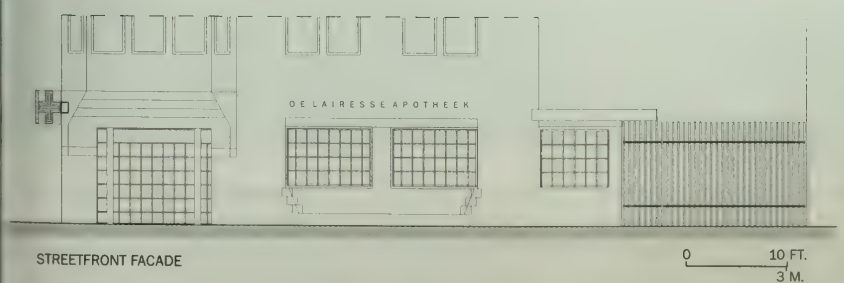




PROJECTS

Through transparent, luminous materials and allusions to leafy forests, **Concrete** evokes serenity at **DE LAIRESSE APOTHEEK** in Amsterdam





STREETFRONT FACADE

0 10 FT.
3 M.

The shop forms a circle edged by curved, transparent cabinets displaying medicinal remedies (above). From the exterior (next page), the glow of a backlit periodic table appears. The architect got permission to enlarge the original entryway (far left in elevation at left).



By Tracy Metz

Everything about De Lairesse Apotheek makes you want to heave a sigh of relief. Relax, the interior seems to say, all will be well. The generous entry, the serene hues of green, the tree trunk that seems to hold up the counter, and the glimpses into an herb garden alongside the building suggest leafy shadows, tranquility, and transparency.

For this apothecary specializing in natural and homeopathic medicine, pharmacist Marjan Terpstra took over the 1,830-square-foot ground floor of a stolid 1920s brick building on Amsterdam's De Lairesse Street, a tree-lined, two-lane artery. In transforming the interior from a bank office, she shunned a clinical or chemical sensibility, wanting to convey instead a sense of harmony between the natural and the synthetic.

Mutual acquaintances brought Terpstra in contact with Rob Wagemans of the Amsterdam design firm Concrete, known for its trendy bars and restaurants, as well as commercial spaces and offices, mostly in the Netherlands. Concrete also designed the interior of NL Restaurant in New York, and will soon open a San Francisco venue called the Supper Club, where diners eat lolling on long, white, mattresslike cushions. (The firm has already completed Supper Clubs in Amsterdam, Rome, and on a cruise ship moored in Amsterdam.)

Unlike the standard pharmacy, De Lairesse features a round shop with furnishings shaped from segments of a circle. "The round plan has no relationship to the building plan itself," Wagemans states unapologetically. "Our idea was to create a space that would seem to embrace you and give a feeling of escape from the rat race outside, at least temporarily."

Inside the main space, an arced, black-leather waiting bench faces a semicircular, concrete-epoxy counter that seems to hang from a tree trunk in the middle of the room. Hollowed out, the trunk actually sheathes a structural steel column. A green photographic print of gingko leaves beneath a protective layer of transparent epoxy covers the floor.

Medicinal products are arranged in 522 transparent drawers in floor-to-ceiling cases that curve to form segments of a circle. Fronted in green Plexiglas, the drawers glow with green backlighting—a signature technique in Concrete's bars and nightclubs. Another curved, glass cabinet screens the work area behind it and holds orders awaiting pick-up. In the old days, this zone would have contained a lab for mixing remedies, but now it's only a place for storing and dispensing such items. As a reminder of that earlier era, long glass shelves along the back wall display bottles and vials in myriad shapes and sizes.

Next to the main space, a small side room provides a table with two chairs where clients can sit and read about natural and homeopathic

Tracy Metz is RECORD*'s Amsterdam-based correspondent.*

Project: *De Lairesse Apotheek, Amsterdam*
Architect: *Concrete Architectural Associates—Rob Wagemans, architect; Gilian Schrofer, designer; Joris Angevaare, project architect; Erik van Dillen, interior architect*
Consultants: *De Best Elektrotechniek (lighting); Labotorivm (graphics)*
General contractor: *D.P.D. Doornbos*

One wall of the entry vestibule provides brochures on natural and homeopathic treatments (center in photo below). The luminous periodic table (at right below, and opposite) forms a wall that can slide forward to seal off the entrance at night.





treatments or hold private consultations with the pharmacist. The apothecary also organizes lectures and runs a mail-order service. And brochures on almost every imaginable ailment are available on shelves lining a side wall in the entry area. This spacious, loggialike vestibule, for which the architects cut out a 13-by-16-foot section of the building's brick facade, also presents the periodic table in backlit, translucent panels across its rear wall. The paneled layer doubles as a mobile facade on rails when the staff slides it forward at day's end to seal off the entrance.

Getting permission to enlarge an ordinary front door into a more generous opening involved considerable discussion with the Municipal Aesthetics Board. After that was resolved, the neighbor across the street complained about nighttime glare from the backlit panels.

But most of the response has been positive. The pharmacy won a Dutch Design Award last year, and it pleased Wagemans to see his unconventional pharmacy honored in the seemingly conventional category of "retail environments." Here, even staff attire deviates from drugstore norms. At Terpstra's instigation, all the employees were chicly outfitted at Armani in all white and/or black—calm-looking garments compatible with the atmosphere of wellness and relaxation. The owner also had special leather aprons designed for them. "Our job as architects is to materialize our clients' dreams," says Wagemans. "Marjan Terpstra's dream is to make people better." ■

Sources
Counter: *Corian*
Lighting: *Erco; Modulor*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

1. *Vestibule*
2. *Periodic table/ sliding facade*
3. *Shop area*
4. *Counter*
5. *Seat*
6. *Work area*
7. *Herb garden*





The floor bears a photo of gingko leaves beneath a protective layer of clear epoxy (this page). A glass cabinet (opposite) screens the work area from front-of-the-house activities and holds orders awaiting pick-up.



Walls and ceiling made of cardboard strips set within a steel frame offer a remarkably textured surface for the lounge area of the café. Light fixtures hold both halogen spots and actual flickering candles.

For the pint-size **INI ANI COFFEE SHOP** in Lower Manhattan, **Lewis.Tsurumaki.Lewis** reinvents the java-sipping experience

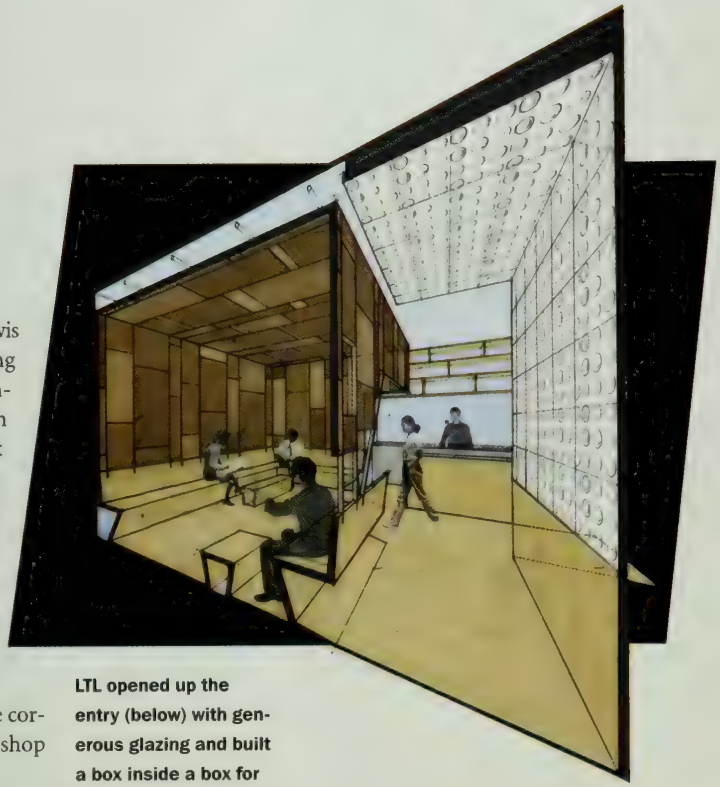
By Clifford A. Pearson

Fast, cheap, and in control. That's the way Lewis.Tsurumaki.Lewis (LTL) tackled the small but challenging job of designing and constructing a hip café in New York City's rapidly gentrifying Lower East Side. With less than three months from the start of design to the pouring of the first cappuccino and just $40,000 for construction, the 13-person firm managed to turn an old fortune-teller's parlor into an inviting place packed with spatial and material invention.

Headed by the twins David and Paul Lewis and Marc Tsurumaki, LTL designed and built almost everything in the 350-square-foot coffee shop—from the Cor-Ten-steel frame around the large (6-by-8-foot) storefront window to the vertical handle on the entry door and the light fixtures that combine a halogen spot with a flickering candle. Luckily, LTL's studio is right around the corner from the project, allowing the firm to fabricate pieces in their shop and walk them over themselves.

Collapsing design and construction into a seamless process, the firm was able to move quickly while using the project's constraints to inspire its form and surfaces. "The everyday aspects of the program helped generate the design," says David Lewis. So when the clients, Kevin Mancini and Payam Yazdani, asked for a subdued lounge in addition to space for take-out orders, LTL created a box within a box, using stacks of 2-inch-wide strips of corrugated cardboard to define the sit-down area. The architects set these strips in a steel cage, hot-gluing them together for a dropped ceiling but relying on only gravity and a tight fit to keep them in place on the walls. The cardboard absorbs noise from inside the café but allows light from spot fixtures and sound from speakers above the ceiling to trickle down to customers.

Along the path to the service counter, LTL created a wall with 479 plaster impressions of coffee-cup lids in various sizes and designs. The cool white surface, punctured by neat rows of circles, provides a welcome contrast to the rougher texture of the corrugated walls, and comments amusingly on our unthinking reliance on take-out throw-





LTL opened up the entry (below) with generous glazing and built a box inside a box for the café (above).

Project: *IniAni Coffee Shop, New York City*
Architect: *Lewis.Tsurumaki.Lewis—David Lewis, Marc Tsurumaki, Paul Lewis, James Bennett, Lucas Cascardo, Alex Terzich, project team*
Base contractor: *J.Z. Interior Renovations*
Design-build team: *Lewis.Tsurumaki.Lewis*





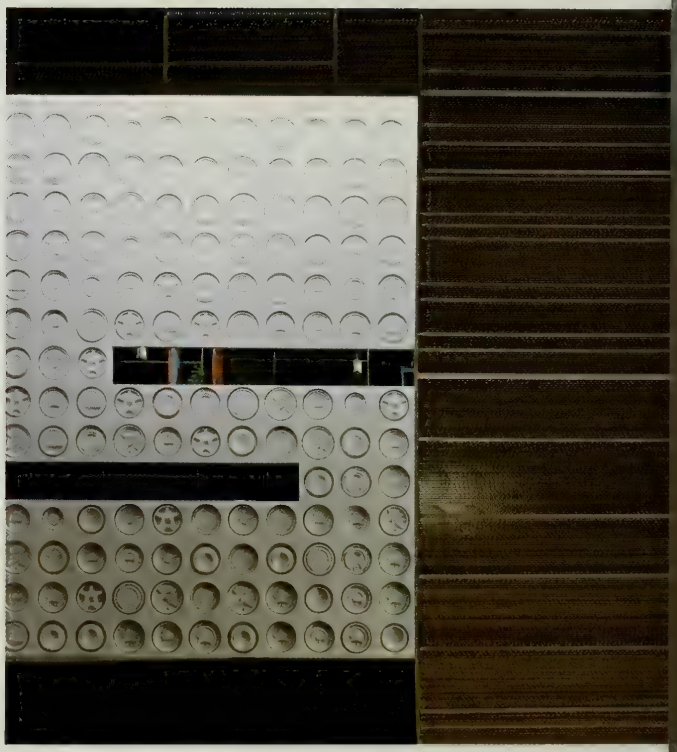






1. *Circulation*
2. *Lounge*
3. *Service counter*

FLOOR PLAN



A contractor took care of demolition and electrical work, but LTL did all of the construction, including building the cardboard walls (upper left two) and casting the coffee-cup lids for another wall (left, right, and bottom left).

aways. "We like to take ordinary things and make something inventive out of them," explains Tsurumaki. The firm used laminated felt strips on a banquette at one restaurant and is now sticking bamboo skewers into the ceiling of another. Customers at IniAni often stop at the plaster wall and marvel at the array (more than 50) of typically unnoticed lid variations.

The architects designed and built the tables, chairs, and banquettes, echoing the floor's oak planks and the wall system's rolled steel. The result is a convergence between surface and form that ties the place together. Employing a limited palette and witty assemblage of inexpensive materials, LTL enriches the ordinary. As Paul Lewis explains, "Through repetition of the commonplace, you can change the way it's perceived." ■

Sources

Steel: *Ryerson Tull*

Wood: *Rosenzweig Lumber*

Cardboard strips: *Able National*

Stainless-steel counter and radiator covers: *Master Restaurant*

Tables, chairs, and banquettes: *Custom by Lewis.Tsurumaki.Lewis*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



Chairs echo the banquettes' zig-zag profile while using the same wood as the floor and the same rolled steel as the wall frames. The stacked cardboard in the freestanding portion of the wall allows diffuse light to trickle through.

Transforming a horizontal space, **SOM** conjures up a gleaming interior world of vertical reflections at its **SKYSCRAPER MUSEUM** in New York City

By Suzanne Stephens

It seems slightly ironic to wedge a museum devoted to the taller-than-tall achievements of the skyscraper into a horizontal, ground-floor space. Yet Carol Willis, the founder, director, and curator of the Skyscraper Museum in Lower Manhattan, is elated with her 5,000 square feet at the back of the new Ritz Carlton Hotel in Battery Park City. For one thing, it was free: Millennium Partners, the developers working with the Battery Park City Authority, donated the space in a 67-year lease, where the museum pays only condominium charges.

Willis is also elated that Roger Duffy of Skidmore, Owings & Merrill (SOM) figured out a smoke-and-mirrors strategy to make the horizontal space seem vertical—without the smoke, of course, and with stainless-steel, mirror-finished panels on the floors and ceilings. And SOM's architectural expertise came gratis. On top of that, Tishman Construction volunteered construction management services and made sure the stainless steel and other materials could be had at a reasonable price. Jaros Baum & Bolles and Pentagram also donated their respective m/e/p and graphic design services. (The cost of the interior still ran to about $2.5 million.)

Often with freebies, the architectural result turns out nice, clean, and serviceable, offering a new coat of paint for which everyone feels immensely grateful. So it comes as a bit of a jolt to find a spectacular interior here. By surfacing floors and ceilings with gleaming, reflective, stainless-steel panels, Duffy tricks your eye—and your feet: You almost think you've entered a vertical interior world populated by tall display vitrines soaring to infinity. To give an ambient glow to these sleek, Minimal surfaces, Duffy and his team installed fluorescent panels at the tops of the vitrines. Appearing like so many windows illuminating the towers by night, the reflections of the lighted panels function as glimmering beacons to a world of skyscrapers above and below. No nasty interruptions in ceiling and floor planes mar the illusion; the raised-plenum floor where air is distributed conceals the electrical wiring and pipes.



The displays within the fiberboard vitrines themselves resemble large Joseph Cornell boxes, providing succinct visual and textual histories of skyscraper icons, such as the Empire State Building and World Trade Center towers in New York and the Sears Tower in Chicago, along with recent structures, such as the Jin Mao Building in Shanghai. Exhibitions devoted to aspects of this 150-year-old American invention will change in the main part of the gallery, with permanent displays reserved for the perimeter.

Visually amplifying the space with minimal means was not the architect's only trick. The found space, which rises to a 16½-foot height (floor-to-floor) underneath the hotel ballroom, needed to include the gallery, a bookstore, plus an additional 800 square feet of offices. Because of the high water table in Battery Park City, the basement space for the hotel popped up to 2 feet above grade for much of the area. Duffy placed the

Project: *The Skyscraper Museum, New York City*
Architects: *Skidmore, Owings & Merrill—Roger Duffy, AIA, design partner; Scott Duncan, Associate AIA, Ross Wimer, AIA, senior designers; Kevin Peters, AIA, senior technical coordinator; Carlos Infantes, technical team*
Engineers: *SOM Chicago (structural); Jaros, Baum, & Bolles (m/e/p)*
Consultants: *SOM Chicago (lighting); Shen, Milsom, Wilke (acoustical); Pentagram (graphic design)*
Project manager: *Sedlis Goldstein Group*
General contractor: *Tishman Construction*



Entering the Skyscraper Museum, visitors ascend a ramp surfaced in stainless-steel panels with acid-etched rectangles to prevent slipping (below). Soon they arrive at the gallery (opposite).



On the upper part of the entrance ramp, Pentagram has silk-screened old postcard images on glass (below) across from the photo-mural. The main gallery (opposite) illustrates the vertical play of surfaces









MEZZANINE LEVEL



MAIN FLOOR

1. *Entrance*
2. *Entrance ramp*
3. *Bookstore*
4. *Gallery*
5. *Bathrooms*
6. *Offices*

main entrance on the long west elevation, where a gradually ascending ramp, parallel to the perimeter wall, takes visitors past the bookstore up toward the north end and then into the gallery, 4½ feet above grade. Those going to the museum offices continue on the switchback ramp to the mezzanine another 4 feet above the gallery floor.

Although the concrete shear wall had to stay, SOM opened up the space by transferring the weight carried by the original grid of columns to three columns in the wall of the museum offices alongside the gallery. Most of the vitrines come with casters, although four vitrines, locked in place at the back of the gallery, conceal structural columns.

With this project's location six blocks south of Ground Zero and the increasing cluster of history museums in the area—the Museum of Jewish Heritage, the National Museum of the American Indian, and others—the Skyscraper Museum's sophisticated, kaleidoscopic setting should attract a fair amount of traffic. Shortly before Willis founded the museum in 1996, she wrote *Form Follows Finance* (Princeton Architectural Press, 1995), detailing how economics, not just function or aesthetics, determined the skyscraper's form. Ironically, as it turns out, she now presents these structures in a museum whose own form emerged from altruism. As they say, "Only in New York." ■

Sources

Glazing: *Viracon; Floral Glass*
Museum display vitrines: *GER*
Floor panels: *American Industries*
Raised floor system: *Tate Access Floors*
Ceiling panels: *Railtech*
Lighting: *NeoRay; Lightolier; Lutron*
Graphic films: *Duggal Color Graphics*

For more information on this project, go to Projects at **www.architecturalrecord.com.**

Carol Willis, the founder and director of the museum, placed displays in fiberboard vitrines, including contemporary towers (opposite) as well as historic ones (below).

With undulant, folded planes, Graft animates the interior of Q!, a new hotel in Berlin, sensuously flowing walls into ceilings and furniture



By Philip Jodidio

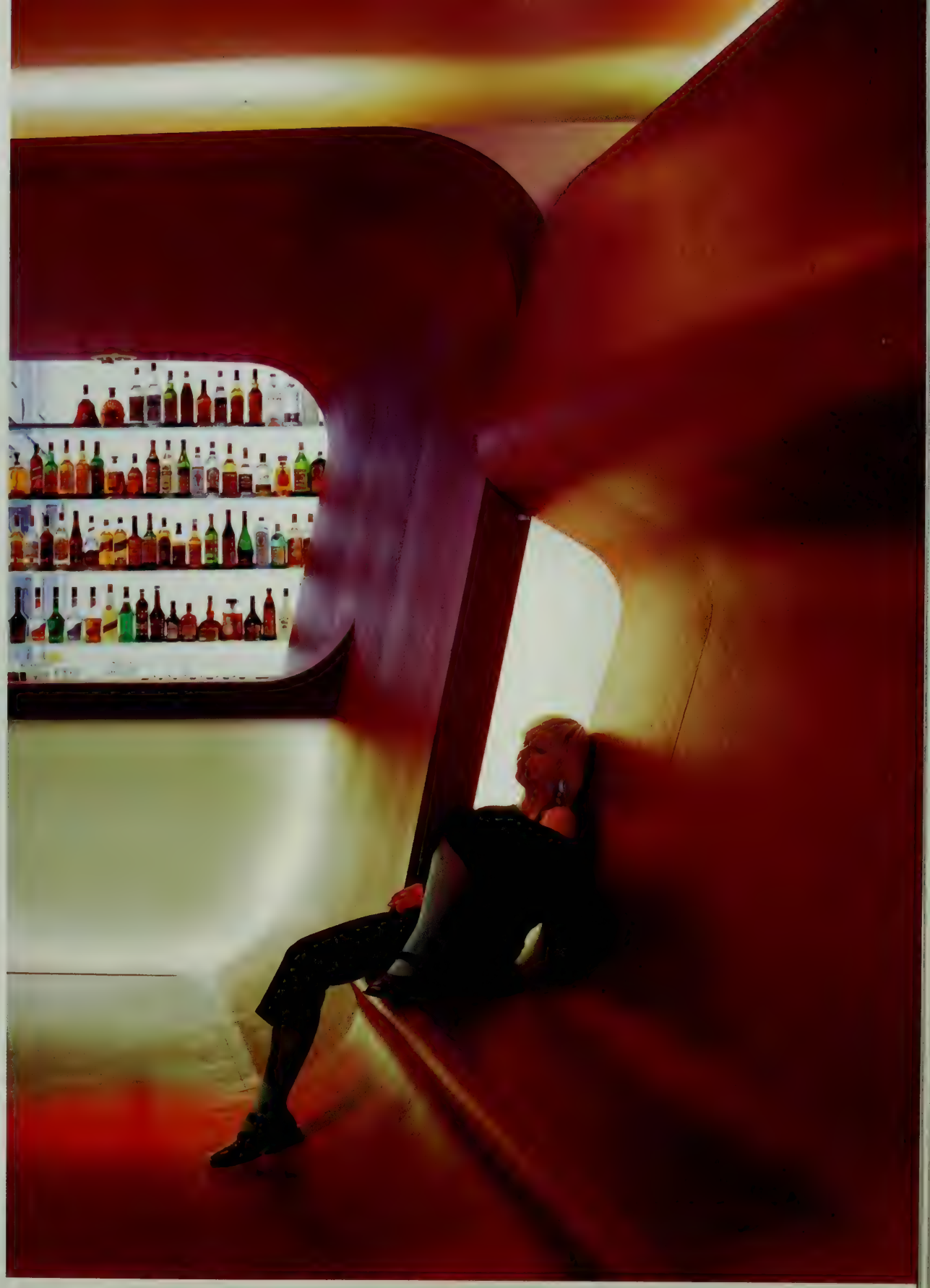
Look for luxury goods shops in any self-respecting European capital, and the immediate corollary, the "design hotel," can't be far away. Sure enough, in Berlin, around the corner from Chanel, Louis Vuitton, and Cartier, a new hotel so chic its entrance carries no name proves the rule. But for those who know where to look, Q! isn't hard to find. Within a relatively undistinguished gray facade, punched windows (of the sort commonly seen in this city) reveal the first hint that Q! stands apart from its neighbors in this high-rent district, just off the Kufürstendamm. From the street, white translucent curtains veil the hotel desk, but just through the glass front doors, the visitor enters a sea of wraparound, red surfaces that look more like California than New Berlin.

Flowing from the lobby into the lounge and restaurant, curvy, red-linoleum-clad surfaces glide seamlessly from floor to wall. Couches and built-in furniture similarly bear the mark of the architects, Graft, a young Los Angeles- and Berlin-based firm with a total of 20 employees. Its partners, Wolfgang Putz, Thomas Willemeit, and Lars Krückeberg, owe this commission more to Hollywood connections than German origins. Hotel operator Wolfgang Loock called them in 2002 after seeing an article on the Hollywood Hills studio they'd designed for actor Brad Pitt.

By the time Graft took on the interiors for this hotel—the firm's first—its developer had already selected an architect for the shell of this seven-story building, though construction had not yet begun. Graft shared little of that architect's sensibility, but managed to work with him nonetheless. After proposing a different facade (which was never realized), the partners accepted the delicate task of executing a challenging project with a low budget (approximately 1 million euros for the interior).

Philip Jodidio is a Paris-based journalist and the author of more than 20 books on contemporary architecture.

Project: *Q!, Berlin*
Architect: *Graft—Lars Krückeberg, Wolfram Putz, Thomas Willemeit, partners; Wolfgang Grenz, project leader; Johannes Jakubeit, Michael Rapp, Sasha Ganske, project team; Stephanie Bünau, Sven Fuchs, Lennart Wiechell, Leo Kocan, Nikolas Krause, Helge Lezius, participants*



from the exterior
te), folded red
enliven the
s. Inside, floors
to walls, ceil-
d furniture, as
ar (right).





Undulant red-linoleum-clad planes bend to form high and low perches, illuminated recesses (right and opposite, bottom), and the front desk (opposite, top). Graft also designed the fireplace and couches (below).



The spa, in the basement, includes a sandy "beach" lounge/cinema (left and bottom left) and black-terra-cotta-lined showers (opposite). Here, sculptural though rectilinear walls catch light and shadow, while incorporating shelves (opposite and below right).

1. *Reception*
2. *Lobby/lounge*
3. *Restaurant*
4. *Bar*



TYPICAL UPPER LEVEL

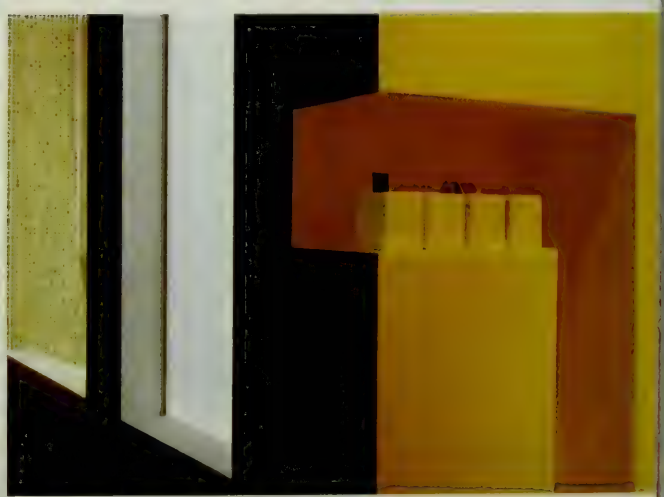
5. *Buffet*
6. *Kitchen*
7. *Standard guest room*
8. *Front entrance*

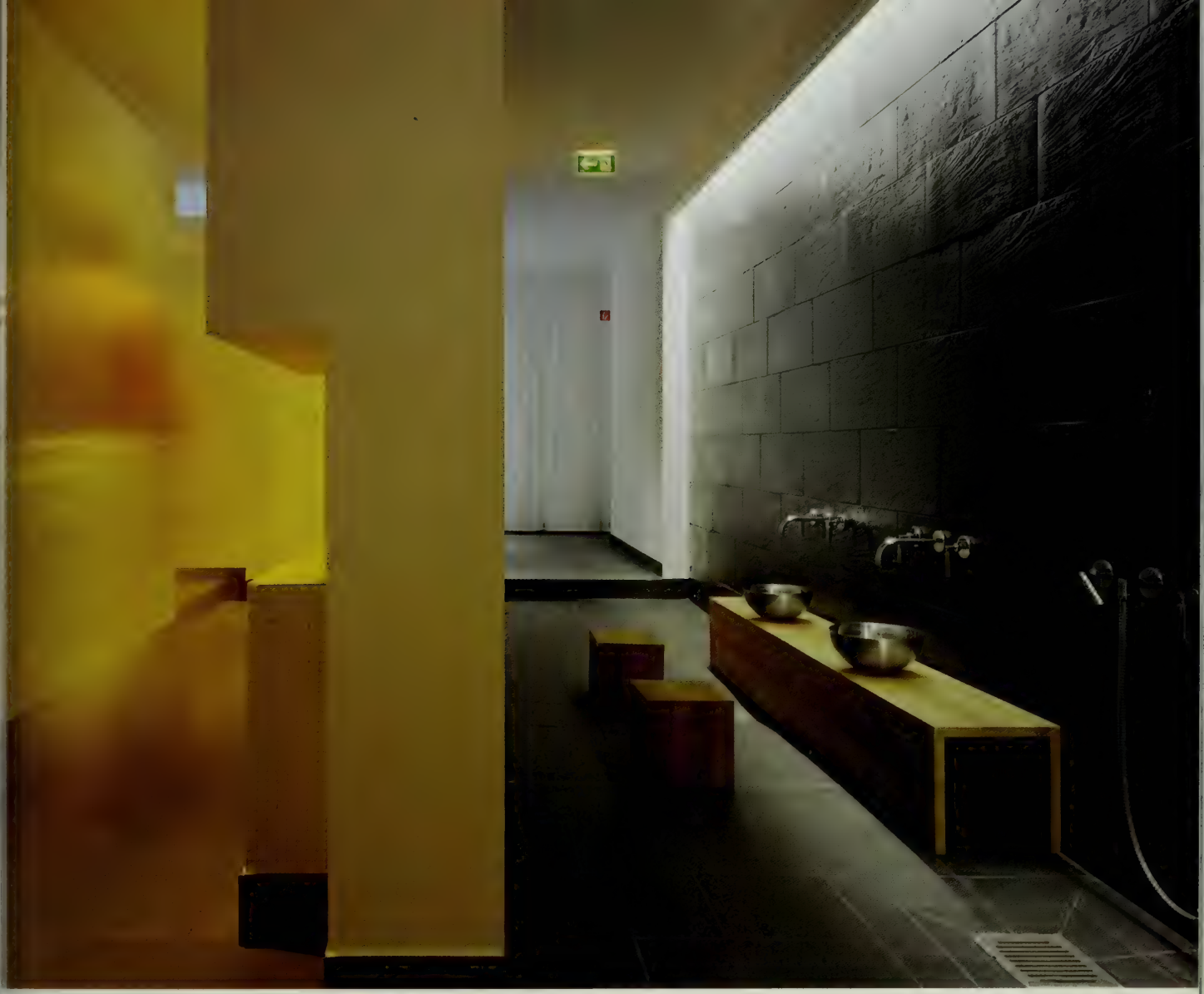


ENTRY LEVEL

N 0 10
3







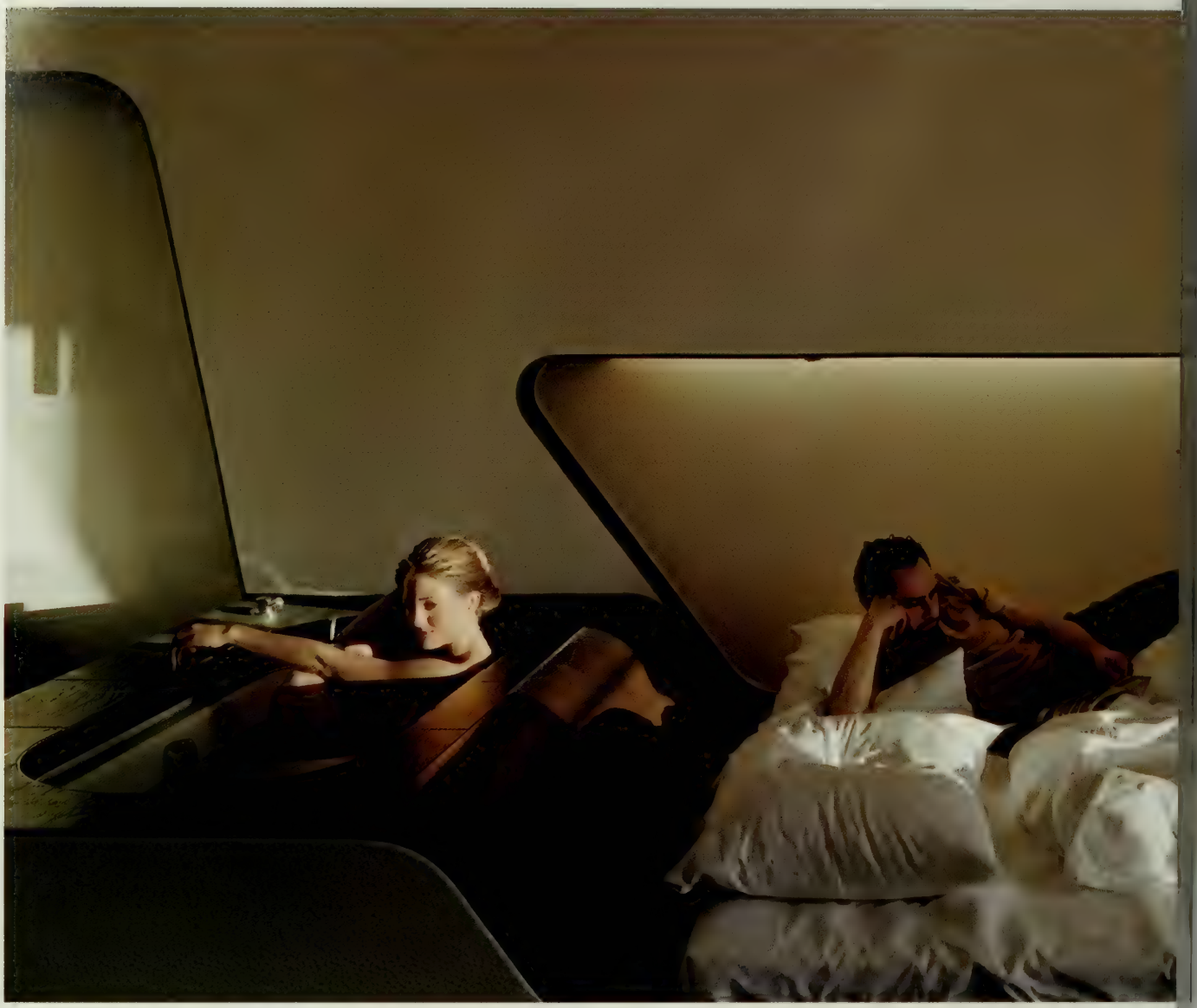
and a client perhaps not initially attuned to their ideas. Further constraints included an elevator and stair core already in place near the entrance and a small footprint, measuring just over 4,000 square feet.

Throughout the 32,000-square-foot building, Graft succeeded in imposing a unified aesthetic—one admittedly influenced by the folded planes of architect Neil Denari, who became director of Southern California Institute of Architecture (SCI-Arc) just after Putz and Krückeberg had completed their studies there. At Q!, continuous, streamlined surfaces wrap not only the street-level public areas but also the guest-room interiors, where the palette shifts to white against smoked-oak floors. Here, walls meld into desks and ceilings. Overhead, curved ceilings lightly printed with Christian Thomas's photographs of a woman, aim to give these quarters what Putz calls a "cocoonlike feeling."

Carefully thought out, the room designs favor an enveloping smoothness that does away with many everyday clues to designated function, such as door handles. Cupboards or light switches are not immediately visible. According to Putz, "We want the visitors to take a moment to orient themselves." Though sleek wrappers seem to be de rigueur in new design hotels, Graft crafted the aesthetic skillfully, conveying a sense of high quality through good workmanship, despite the low budget. What looks like slate in the bathrooms, for example, is really black terra-cotta, and so forth.

While the pale ceiling photos may recall Jean Nouvel's more forceful integration of movie images into his design hotel in Lucerne, Switzerland [RECORD, May 2001, page, 238], the Graft architects claim to have found inspiration elsewhere. They liken their work to a film storyboard—cinematic in its aspirations, whereas most Berlin architecture, suggests Putz, tends more toward still photography. The experience of working with Brad Pitt, he says, influenced Graft to consider architecture in these narrative terms. Whether in the bar or the guest rooms—where the bathtub sometimes melds with the bed—the architects imagined the space as a movie director might, envisioning the scenes with guests moving through the interiors, or sets.

Q! attempts to bring to Berlin the kind of style and design-consciousness of Philippe Starck's Saint Martins Lane (SML) hotel in





London [RECORD, January 2000, page 90], or other Ian Schrager properties, without spending a fortune. Although the Graft partners say they've never seen the inside of SML, it appears that the influences of Starck and Nouvel, in addition to Denari, have somehow filtered into Q!. Both the hotel's design and its service give a distinct impression of déjà-vu. But perhaps what seems refreshingly Californian in Graft's approach is its spirit of openness and optimism, transcending what the partners call "typical German skepticism." Instead of rejecting this project as impossible, with its tight space and means, the architects flowed the smooth curves of contemporary design into a hard-angled, gray Berlin box—no small feat. ■

Sources

Linoleum: *Marmoleum*

Furniture: *Vitra; Fussgestell; Alias; Moroso; Paola Lenti; ArtifortLande; La Palma; Tischplatte*

Sinks: *Duravit*

Shower fixtures: *Dornbracht*

Tiles: *Atala; Sicis*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



In many guest rooms, a bed and tub merge into a single, curvy whole, daringly juxtaposing activities that conventionally occupy separate spaces (this page and opposite, top and bottom).



Entry doors with a subtle translucent pattern (opposite, top) give a clue to an interior realm of artwork (opposite, bottom) and Minimalist white curves. Sometimes with cutouts, the wall planes deftly intersect (this page).

Wielding curvy white walls, **Studio 0.10** interweaves galleries, casual lounges, and state-of-the-art sound studios at **AZLA**



By Sarah Amelar

The plain brick exterior of AZ Los Angeles (AZLA) gives few clues to what lies within. Except for an address number, no sign identifies this one-story industrial building across from a car-towing lot in Santa Monica, California. Like an exclusive club, quietly making an anonymous wrapper and in-the-know clientele part of its caché, this boxy shed reveals only a glint of its interior realm: just a pattern of translucent rectangles playing across its glass entry doors.

Inside, AZLA offers facilities for engineering, recording, and composing music, voice-over, and dubbing tracks for radio, television, and film. With the gradual westward migration of Los Angeles's post-production sound industry, the studio and a cluster of others recently settled in this district, squeezing out much of the neighborhood's grittier old guard (though the car lot remains).



Here, in a city of ephemera and competitive image making, even the sound people need to keep reinventing their look. For AZLA's new location, the latest in acoustic and electronic technologies simply wouldn't have been enough: A freshly revamped identity was clearly in order. With two recording and editing rooms, plus one state-of-the-art surround-sound studio—a rare offering in a small, independent facility—the Peruvian-born owner, Alonso Zevellos, envisioned a place where he could also exhibit his extensive collection of Contemporary and Minimalist art, throw chic parties, and provide a casual hangout for the right crowd.

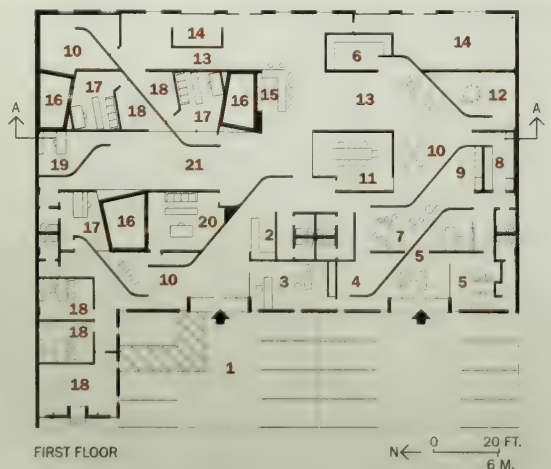
He challenged his architects, partners Andrew Liang and Li Wen of Studio 0.10, to transcend the sound industry's aesthetic cliché, which Liang characterizes as "steely, high-tech, and muscle-flexing with incense-burning, bohemian touches." Besides creating a salon atmosphere and accommodating complex technological requirements, the architects would have to choreograph a space where clients could enter, exit, and work without running into competitors (likely fellow clients)—and without feeling constrained or corralled.

With a light touch, the architects positioned long, curving white walls to separate distinct functions and gently guide movement through the 15,000-square-foot space. Though the plan recalls the sequential shunts of pinball machines, its 3D reality appears purely sculptural. The smooth walls seem to slip past one another—occasionally bending overhead or intersecting—enhancing spatial flow, rather than imposing barriers. By keeping these white elements from reaching the ceiling and by raising them from the floor with deeply recessed reveals, Studio 0.10 retained a sense of fluidity, free of encumbrances. Interior views appear wide and panoramic.

A nearly invisible band of butt-joined glass—sometimes turning an unexpected, optically illusive corner—provides full enclosure where needed while maintaining visual openness over the tops of the partitions. Reminiscent of the white sweep of New York City's Guggenheim Museum, the walls become curving backdrops for Zevellos's collections of sculpture, painting, and mid-20th-century Modernist furniture. Along with sleek chairs and tables, many by Charles and Rae

Project: *AZ Los Angeles, California*
Architect: *Studio 0.10 Architects—Andrew Liang, Li Wen, principals; Eiko Amada Ano, project leader; Gregory Haynes, project team*
Structural engineer: *Martin Gantman*
Acoustics: *Ilbruck*
General contractor: *Benchmark MPE*



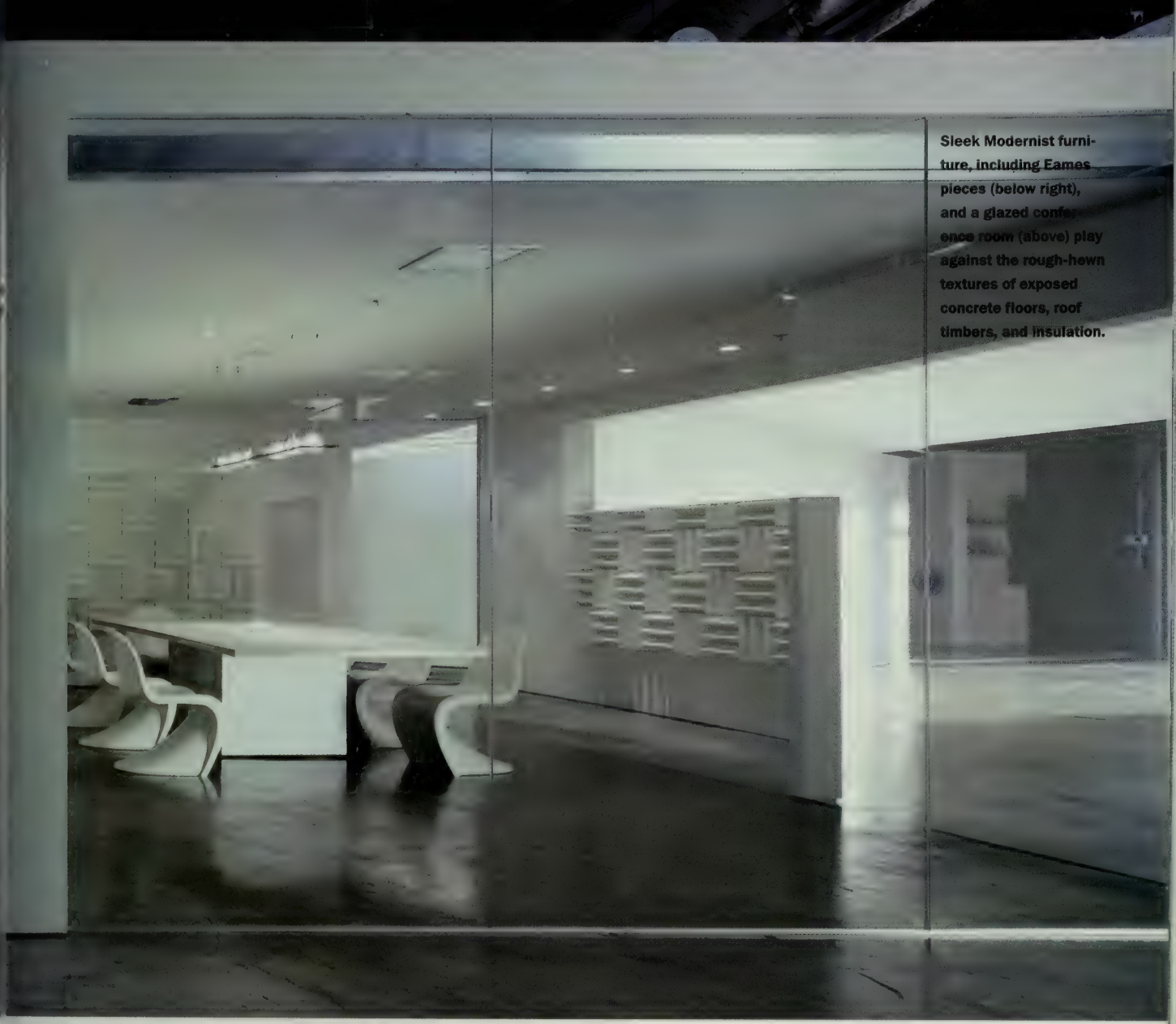


FIRST FLOOR

1. *Parking*
2. *Reception*
3. *Video viewing*
4. *Accounting*
5. *Executive*
6. *Graphics station*
7. *Internet café*
8. *Kitchen*
9. *Copy/fax*
10. *Lounge*
11. *Conference*
12. *Lunch*
13. *Gallery*
14. *Storage*
15. *Bar*
16. *Recording studio*
17. *Engineering studio*
18. *Producer*
19. *Programming head*
20. *Surround sound*
21. *Corridor*



SECTION A-A



Sleek Modernist furniture, including Eames pieces (below right), and a glazed conference room (above) play against the rough-hewn textures of exposed concrete floors, roof timbers, and insulation.





Eames, the streamlined partitions (actually painted wallboard) play against the existing concrete floor, resealed but worn with time and industrial use, and the open plenum overhead, revealing timber beams, ductwork, and insulation. These rough-hewn surfaces (retained, in part, as a budgetary solution) offer a textural counterpoint, as well as a strong horizontal continuum throughout the space.

By design, AZLA refrains from announcing itself as a sound studio, especially in its entry area and other communal zones. While perceived openness and exposed industrial elements play essential roles, the architects intentionally concealed, or inverted, the operation's technological brawn and vascular underlay of cables, opting instead for sleek understatement.

But behind the long Minimalist curves lie practical, competitor-shielding systems of individual exits and entrances, as well as chambers calibrated and layered for acoustic precision. While discreetly hiding the mechanisms, the sinuous interplay of white planes finesses the separation between public and private, creating a variety of casual break-out and support spaces—lounges, galleries, a bar, and a kitchen—for artists and edit working long, intense hours in sound seclusion. In a central position crisp white box forms a freestanding conference room, sealed by a lar aquariumlike window but fitted with shades for optional privacy.

Equally nuanced are the sources of illumination—both natur and electric. Preexisting industrial skylights bring sunlight deep into t interior. The rays, curves, shadows, reflections, and rhythms of fixtures work together in dynamic harmony, playing off a single tone of paint. AZLA's clients fine-tune the rich colors of sound, the spaces around the become animated in the many shades of white. ■

Sources

Paint: *Dunn-Edwards*

Lighting: *Flos; Louis Poulsen; Illuminating Experiences*

Acoustic materials: *Sonex; Ensolite*

For more information on this projec go to Projects at **www.architecturalrecord.com**









Open to view, the meeting room (above) can be concealed by shades. AZLA's amenities include a bar area (far left). The curving walls, beneath hovering lighting tracks, shape the space and virtually become abstract sculptures in themselves (left). Their smooth, white surfaces play against the patina of worn concrete floors.



Layers of decay inclu
peeling paint, cracke
plaster, uneven floors
and exposed pipes.

Valuing the scars of time, **Kulczynski Architects** turns a derelict factory into a vibrant cultural center at **FABRYKA TRZCINY** in Warsaw



By Sam Lubell

In transforming a dingy, abandoned meat-processing plant into the now-thriving Fabryka Trzciny art center, the Warsaw firm of Kulczynski Architects had a rather unusual stipulation: The more decay, the better. The team chose to explore the character of a building that comes only from years of grime, wear, and neglect.

Industrial grit, of course, is de rigueur in many new arts spaces, bars, and lofts. One has only to think of Mass MoCA in Massachusetts or Dia:Beacon in New York to attest the popularity of turning old factories into art havens. But such fashionable grime comes with a clean finish: a sense that everything is orderly and neat underneath the messy facade. Not so at Trzciny, a 19,000-square-foot space built in 1916 in the city's Praga district, now an increasingly popular manufacturing-turned-artsy area.

"It's so hard to find places like this in Warsaw," says Yacine Diallo, an architect on the project. "Everything [new] here is either high-tech or Minimalist. This was something completely different."

The architects had to engage creative problem solving to retain as many of the plant's original features as possible while simultaneously preventing more deterioration, bringing the building up to code, meeting a modest budget—and appealing to young Poles. The program for the lofty space, with ceiling heights of about 12.5 feet, included a 2,045-square-foot performance area, in the former boiler room; a 2,658-square-foot restaurant/concert space; three bars; a cavernous, white-walled gallery; an exhibition area crowned by a massive wood barrel vault; and a light-infused lobby that doubles (with blinds drawn) as a film screening room.

Few walls were demolished, and most surfaces remain untouched. Large pockmarks and discolorations still mar the facade, while many interior walls, like those in the lobby and boiler room, bear uneven paint and brickwork, exposed old pipes, and deep gashes. Diallo views these scarred remains as paintings of sorts: poignant visual reminders of the effects of time. Bare light bulbs illuminate most rooms, and many floor surfaces, which the firm left untouched, resemble your grandmother's linoleum tile, only they're a shuffled mix of materials, changed and repaired over time, looking in places as if they'd been jackhammered by an angry contractor.

Responding to practical needs, the firm sandblasted all surfaces and coated them with clear sealants to halt decay and dirt buildup. Some hallways required lengthening to satisfy building code. The team rebuilt the bathrooms (fashioned from W.C. cabins of decommissioned trains) and kitchens with a glossy, bright red finish that seems antithetical to the overall design, but was meant, Diallo says, to lend a contemporary touch and a bit of fun. The team has also overhauled the electrical and HVAC systems, as evidenced by a few shiny new pipes and ducts snaking through the clutter.

To further update the aesthetic, the bar at the art center's restaurant—a sophisticated spot serving Polish and Continental fare and hosting

Project: *Fabryka Trzciny, Warsaw*
Architect: *Kulczynski Architects—Bogdan Kulczynski, Joanna Kulczynska, Yacine Diallo, Agnieszka Chmielewska, design team*
Engineers: *Roman Nalewajko (structural); Anrzej Dziduch (electrical)*







A large bookshelf in the former boiler room (left) invites reading and reflection. Shiny new pipes and ducts in one of the loftlike spaces (bottom left) indicate the completely overhauled HVAC and electrical systems. Uneven floors (bottom right) show various stages of factory development. Magenta-colored methanol bottles (opposite, top) create a mesmerizing bar backdrop. Industrial relics evoke memories of a long-past era (opposite, bottom left). New bathroom stalls (opposite, bottom right) reuse the W.C. cabins of decommissioned Polish National Railway cars.











1. *Porch*
2. *Lobby*
3. *Cloakroom*
4. *Restaurant*
5. *Bar*
6. *Kitchen*
7. *Former boiler room*
8. *Storage*
9. *Dressing room*
10. *Gallery*

raucous concerts—features a backdrop of 4,000 magenta-colored metha bottles (recalling the methylated spirits sometimes imbibed in the pas poor Poles who couldn't afford liquor), stacked in rows behind a 30-fo long steel pipe topped with a glass counter. Lit by reflectors, the bot produce a mesmerizing glow. The team intelligently mixed such contem rary touches with historic remnants. Behind another first-floor bar, ne stacked electrical dials, collected from around the factory, intensify industrial imagery. The old boiler room has become a performance sp with a furnace, 5 feet high and 21 feet across, transformed into a stage.

In Fabryka Trzciny, the architects embraced an unconventio aesthetic (call it "shabby, shabby, shabby chic")—probably no one wo call the place beautiful. But its originality and boldness, even in a time industrial-theme overload, resonate. The firm has created an invitin unpretentious spot for a diverse crowd that includes artists, students, b nesspeople, fashion designers, and even pop stars. Entry lines on m nights, Diallo claims, snake out the door. The owner, a local music p moter, wanted to evoke the atmosphere of the clubs he'd frequented youth; places that (along with illicit behavior) fostered creativity, talki and dreaming—unlike Europe's often cold, techno-music-dominated so centers, as Diallo points out. Walking from room to room, one feels urge to break free of established notions of "cleanliness" and "beau favoring risk-taking edginess over the predictability of order. ■

Sources
Faucets: *KFA*
Ceramic tiles: *Opoczn*

For more information on this proje go to Projects at
www.architecturalrecord.co



Electrical dials (this page), collected from around the factory, darken back to the facility's gritty past and create the bar's inventive backdrop.

Shadows cast by wrought-iron filigree within a pointed arch way—parts of the building's neo-Gothic exterior—play against a Modernist interior (this spread).

At the **JAMES STEWART CENTRE** in Ontario, a neo-Gothic exterior provides a ready foil to **KPMB's** abstract and luminously Modernist interior



By Barbara Dixon

Hamilton Hall was essentially a Modern concrete building dressed in Collegiate Gothic clothing," says architect Bruce Kuwabara of the 1929 edifice at McMaster University in Hamilton, Ontario. "Our [interior] renovation aggressively stripped away layers of building fabric to reveal the deep structure and the truth of its construction." Undressing the place ultimately laid bare a Modernist concrete frame. But the complete transformation of Hamilton Hall from a science-building-turned-student-center into the award-winning James Stewart Centre for Mathematics took the architectural equivalent of a mathematical equation.

The main challenge for Kuwabara's firm, Toronto-based Kuwabara Payne McKenna Blumberg Architects (KPMB), involved formulating a new vocabulary within the existing historic framework—leaving the dignified neo-Gothic exterior intact while turning dark labyrinths into spaces inspiring team-based, interactive study and research. For all the emphasis on community exchange, it was also important to give professors the option of privacy. KPMB worked with a board of mathematicians to shape this 49,000-square-foot renovation, calling for classrooms, lecture halls, labs, offices, a café, and a student lounge.

A highly abstract and Modern interior now resides in stark contrast to the Collegiate Gothic exterior. Within the original stone cladding and oriole windows, faculty offices, graduate study areas, and classrooms form a cluster along the perimeter, essentially creating a monastic sanctuary for serious thought. Clerestories between the offices and on the walls along hallways allow light from the large Gothic exterior windows to filter deep into the building. Floor-to-ceiling glass visually connects lecture halls with corridors while retaining closure. The shell-vs.-interior dichotomy works seamlessly, balancing the spatial interplay between inside and out. Old and new complement one another when, for example, shadows of a wrought-iron filigree dance across a planar Modernist composition of luminous, translucent glass panels with matte ceramic tile floors and blackboards.

Slate chalkboards weave through many of the halls and offices,

arbara Dixon, who often covers design for print and TV, was Elle Décor*'s unding editor and* Architectural Digest*'s architecture and managing editor.*

Project: *James Stewart Centre for Mathematics, McMaster University, Hamilton, Ontario*
Architect: *Kuwabara Payne McKenna Blumberg—Bruce Kuwabara, design partner; Shirley Blumberg, partner in charge; Luigi LaRocca, senior associate; Kevin Bridgman, project architect; Bruno Weber, Garth Zimmer, Simon Haus, project team*



The glazed void visu
connects classroom
(opposite), corridors,
and lounges, reveali
a cross section of
mathematical and
social activity, as in
Math Café (this page





acquiring mathematical scribbles and notations over the course of each d along with dashes of witty graffiti. Just as the blackboards play functio and aesthetic roles, the corridors serve a dual purpose, operating as both p sageways and meeting places (wide enough for tables and benches) t encourage group study, collaborative thinking, and discourse.

Within the existing four-story building, the architects carv out a void—measuring 10 by 69 feet in plan and edged in blue glas connecting and unifying all four levels vertically and horizontally. incision in the original fabric, now occupied by light and space, the v functions as tangible surface and volume, embodying the transparen openness, and multiplicity of purpose that characterizes much of KPM work. Skylights crown this well at its east and west ends, further illu nating the interior and contributing to a prismatic effect that of produces indoor rainbows. A cross section of mathematical and so activity now appears from almost any perch in the James Stewart Cen

Down to the smallest detail, the architects carefully conside how the spaces might be experienced and perceived. Social activity beg on the ground level with a "Math Café" that's readily transformed i classrooms via pivoting chalkboards. Throughout the project, such co monplace elements and materials offer striking yet highly practical des solutions, while keeping to a limited budget.

"The design encourages students, faculty, and visitors to t mathematics," says Matt Valeriote, chair of mathematics and statistics. "T is the first building at a Canadian university to promote that interactio Though tactile and animated by light and shadow, this interior is apparen not distracting: Students say it makes them feel alert and invigorated.

KMPB has transformed the building "from a traditionally co giate structure," as Kuwabara puts it, "into one truly embodying the spiri collegiality." Openness, ease of performance, and spontaneity are key to design—and to the human interactions—here. "This is not about perf tion," says the architect, "it's about life." ■

Sources

Ceilings: *Armstrong (acoustic); Cyro*
Lighting: *Systemalux*
Floor tile: *Stonetile*

For more information on this proje go to Projects at
www.architecturalrecord.com







Blackboards wend their way through the entire building, providing venues for spontaneous calculations, scribbled notations, and stray witticisms (above).

1. *Colloquium*
2. *Lecture hall (existing)*
3. *Math Café*
4. *Tutorial*
5. *Lounge*
6. *Seminar*
7. *Faculty office*
8. *Administration*
9. *Open to below*
10. *Grad student office*
11. *Math lab*



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Charles and Ray Eames, 1956

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Goetz™ Sofa
Mark Goetz, 2000

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Armchair 41
Aalto, 1932

ROCKY MOUNTAIN HARDWARE

Rocky Mountain Hardware believes minimalism, an integral constituent of modern architecture, should be carried through each element in the overall design of a project. "Our bronze hardware stands up to that scrutiny, both through its rich texture and design. In fact, fine hardware is functional art," says Christian Nickum, CEO of the Hailey, Idaho firm. "Hardware should complement design. We have found more and more that architects are choosing hardware in the initial planning stages in order to carry their idea throughout the project,"

The art-grade bronze ingots are immersed in temperatures of up to 2,200 degrees Fahrenheit, before the molten bronze is hand-poured from the crucible into the mold. The resulting raw castings proceed to highly skilled craftsmen for detailed finishing.

Many architects choose to couple a Rocky Mountain Hardware clean-lined escutcheon with a sleek, modern lever. This combination not only complements the minimalist style, but blends into the structure's artistry.



Tempo towel ring shown with the Stepped Escutcheon in white bronze, light patina (TR8 w/E300)

"Rocky Mountain Hardware lets the intrinsic beauty of bronze speak for itself," Nickum says "Modernism is about function and form, and we pay great attention to both."

The transformation from an imagined concept to the finished hardware begins with quality materials. Rocky Mountain Hardware uses only art-grade bronze to achieve their unique designs. Silicon bronze is an alloy of copper, silicon and zinc, which produces a copper-gold color. White bronze is an alloy of copper, manganese, nickel and zinc, which creates a nickel appearance.

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ed thumb-latch entry set shown
ne D grip in white bronze, light
(G301/G304 w/ G609)

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All TEKA products are U.L. and C.U.L. listed for wet locations, and TEKA offers quality roadway and area luminaires utilizing metal halide, high-pressure sodium, fluorescent and incandescent light sources. TEKA luminaires, built of superior materials and fine craftsmanship, endure climatic hardship with grace and longevity.

TEKA uses materials that date to the Bronze Age and which continue to be used on ocean vessels for their longevity and stability.

Copper, like silver and gold, is resistant to oxidation. Adding small amounts of other materials to molten copper changes it to alloys of bronze or brass, hardening it and making it more suitable for casting and machining. Solid copper is used in spun metal parts for TEKA where formability is an advantage; bronze for more rigid, complex cast structural shapes and brass, where high tensile strength is necessary in machined and threaded parts. Stainless steel is the ultimate material when strength in a narrow section is required. There is no stronger corrosion-resistant metal available. All of TEKA's fasteners are 18-8 Stainless steel.

TEKA's glass lenses and diffusers are always tempered and TEKA employs no painted or clear-coated finishes. The materials in TEKA designs develop their patina, a naturally occurring oxide coating. A number of different surface treatments are standard, however.

Its "natural" surface is a result of etching metals to enable differing surfaces to oxidate evenly. Their appearance will change according to climate: in a moist, marine environment copper-based materials will turn green quickly. Luminaires of the same material in the desert will develop a deep, almost reddish brown coloring.

TEKA's "statuary bronze patina" is factory-applied oxidizing agents, followed by a light wax to accelerate what occurs naturally to metals in nature. "This is a good way to go for installations where a uniform look is desired initially, or for interior areas with limited exposure to the elements," says company spokesperson Kim Routh.

"There is always a market for 'upscale goods of the best design and quality..." Larry Routh

Copper, brass and bronze all take on a similar rich, dark-penny look and will be differentiated from one another only upon close observation.

Nickel plating results in a satin semi-matte finish similar to pewter. TEKA's nickel-plated luminaires start out with a deep mechanical and chemical etch to provide the plating a firm bond to the metal. Users can expect nickel-plated luminaires to darken slightly and a green color to show in the corners with exposure to weather.



Tabletop fixture, AZIE bar, designed by David Malman of Architectural Lighting Design, San Francisco

"We share these details because we think our attention to them results in a better, more reliable fixture," says Routh. "At TEKA we employ the latest in light sources–metal halides and long-life halogens, for instance–to create luminaires with often simple lines that accentuate the modernist theme and at the same time are highly energy efficient and, more importantly, beautiful." For more information, please visit www.teka-illumination.com or call 805-434-3511.

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Museum in Santa Monica,
ed by Richard Meier.
g design by Fisher Marantz
Stone, New York

LONSEAL

Lonseal's clean, elegant lines–its bold forms and sophisticated style, its downtown hues, its fashionable feel –have always been reminiscent of the best of Modernism.

Founded in the U.S. in 1972 as a subsidiary of the Japanese parent company, Lonseal dove into the high-stakes world of interior design in the early 1980s, intent on melding its matchless resilience with incomparable style.

Teaming with some of the country's leading designers, Lonseal swiftly unveiled its first high-fashion/low-maintenance embossed and smooth products and launched an award-winning sensation that continues to this day.

Lonseal's environmentally friendly LonEco line of Green products was expanded in 2003 to include LonEco Mesa, an eco-friendly embossed surface made primarily of recycled vinyl and wood powder and emitting ten times less volatile organic compounds than linoleum – a stylish way for architects and designers to bring their specifications under the LEED Green Building Rating System..

Lonseal's commitment to research and development has allowed it to exploit state-of-the-art technology to create strikingly innovative flooring that has become the backdrop for some of the most modernistic spaces: Giorgio Borruso's Fornarina store Las Vegas' Mandalay Place and his glitzy retail space for Sixty at South Coast Plaza, Costa Mesa showcased Lonseal's "reptilean" Londile flooring featuring a stunning metallic tint, dazzling endurance and a wide array of chameleon-like colors.


Lonfloor Nova UV

In June, at NeoCon World's Trade Fair Lonseal previewed one of its most exciting surface innovations, Lonfloor Nova UV. The color-shifting, hologram-like new surface won the Silver Award in the 2004 Best of Neocon competition in the flooring category. Nova UV attracted attention for its light-shifting range of colors and metallic-chip patterning, but sells itself on the basis of its urethane finish that makes cleanup a breeze and promises to drastically reduce maintenance costs over the life of the product. Lonseal Nova UV is the ultimate achievement of smooth-surface practicality and alluring aesthetics.

One of the fastest-growing resilient companies in the industry, the corporate offices and warehouses of Lonseal Inc. are based in Orange, California–where we send out our stunning array of enhancing surface styles all over the country and around the world. For more information, please visit www.lonseal.com or call 800-832-7111.


Londile installation, Arthur Andersen, Chicago, IL

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installation,
e International Showroom
c Design Center
ngeles, CA

If cooking is an art, then the Thermador Professional Series kitchen is surely the ideal muse.

"All of our collections speak to the clean design and integration architects look for," says spokesperson Beatriz Sandoval. "We are very cognizant of design influences on architects and specifiers–in fact, our designs are heavily influenced by our interaction with focus groups, whose feedback dictates the appearance of products the market will see five or six years in the future."

The contemporary residential kitchen, Sandoval says, has taken on the "big, bold, powerful" look–and all the practicality–of the commercial kitchen.

The trend is an outgrowth of a Food Network-inspired revival of the culinary arts and a post-9/11 tendency to entertain at home instead of going out. "More and more people are spending more time at home," Sandoval says, "and the kitchen is the most popular place to congregate."

As a result, she says, kitchen appliances have become entertainment centers, if you will, and "style" is just as important in the kitchen as in the rest of the home. The contemporary kitchen needs to be comfortable. It needs to "feel good."

Integration, Sandoval says, is critical, and functionality is as important as form. "We have a strong history of functionality, and we cultivate that. Thermador is the perfect marriage of classic American style."

The successful contemporary kitchen is based on performance that inspires confidence and style that delights the eye. Thermador's Professional Series is the ultimate expression of personal style, good taste and the appreciation of the complete culinary experience, from cooking and ventilation to refrigeration and dish care. It creat environment that embodies the essence of American lu respect for excellence in craftsmanship and a true appre for fine living.

For more than 70 years, Thermador has elevat culinary craft with original state-of-the-art kitchen appl that exceed even the most demanding expectatio unwavering commitment to spe or performance and elegant is evident in every Thermado uct: the exceptional Profes Series, the quietest refrige on the market, advanced wall and an extensive collecti cooktops, hoods and dow systems that have made Ther an American icon.



The combination of powerful performance and elegant styling make the Thermador Professional® Series the epitome of American luxury in the kitchen. State-of-the-art functionality provide advance surface cooking burner systems offer new features for exceptional performance; the largest oven cavity in its class and advanced third element convection.

Designers can choose b mount, side-by-side or b refrigerators to match Profes Series ovens and cooktops modernistic, professional k look. They can also Thermador's Designer S which features a stainless front, or the Custom Panel designed to perfectly match any kitchen cabinetry.

A re-engineered star-s burner, a feature of the Profes Series, provides unsurpassed spread, faster time-to-boil and recovery time. A patented Ext burner gives you the bro possible range of low temp settings for maximum control, over even the most delicate s A 375 BTU ExtraLow flame cycles on and off with precise t achieving true simmer. The Professional Series grill surface outdoor performance and indoor convenience, an 18,000 flame and an easier-to-use ignition system. Thermador's dashboard-style temperature indicator provides precise te ture readings at a glance. For more information pleas www.thermador.com or call 800-656-9226.

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McGraw-Hill Construction and
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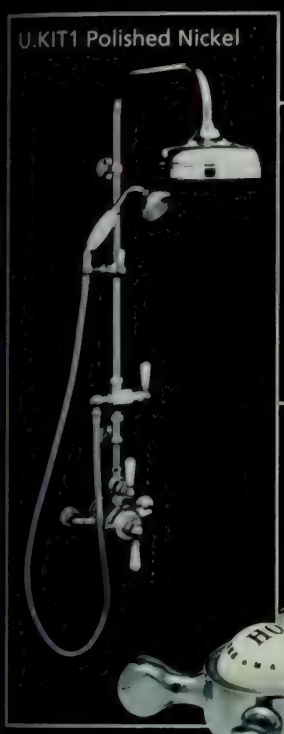
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"Research—the secret weapon in winning better work"
with Steve Jones AIA, Senior Director/Business Development, McGraw-Hill Construction and other guest speakers

Thursday, November 18
"China and the U.S. construction industry"
Norbert W. Young Jr. FAIA, President, McGraw-Hill Construction

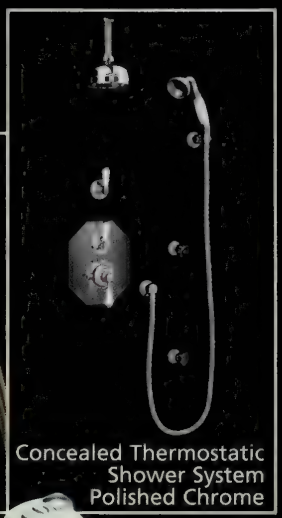


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More and more architects are specifying formaldehyde-free insulation. Must be something in the air.

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It's Comforting to Know We're There.

Architectural Technology

How to keep building moisture from becoming a mold problem ... and why 3D CAD hasn't hit its stride yet

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Moisture control is the key step in halting mold growth in buildings (171).



Graduate students will study innovative design and production tools (187).

In the mid-19th century, many public-health officials believed that deadly diseases like cholera and tuberculosis, which struck the poor in greater numbers than the wealthy, were caused by an invisible miasma that hovered over the slums like a fog, infecting everyone under its blanket. Their thesis proved false, but that didn't mean that living in the slums was healthy. The same goes for mold in buildings. While scientific evidence linking the presence of mold to serious illnesses is mixed, it's still a nuisance that may not only lead to health problems for occupants, but also causes foul odors and destroys carpets, wall coverings, and other interior materials. This month's continuing education story probes the issue of mold growth in buildings. Once again, the benefits of architect-engineer collaboration are clear: Because today's construction materials and techniques seal off buildings from the outdoors more than traditional ones, modern structures are simply more likely to trap moisture—which makes it imperative for architects and mechanical engineers to work together to understand how air will move around within a building, to seal off openings as cleanly as possible, and to size HVAC systems appropriately.

This month we also feature a piece by Ken Sanders, FAIA, on the state of building information modeling (BIM) within design practice. Sanders, author of *The Digital Architect*, has watched the metamorphosis of this long-proposed practice method for years—and offers his thoughts on why the technology hasn't been as widely embraced as software vendors or consultants expected.

Recently, RECORD's technology editors learned that the founding of a new interdisciplinary graduate program at the Stevens Institute of Technology (page 187) was inspired in part by our October 2003 *Innovations* issue. We're glad to have encouraged a new line of thinking in design education. And we've been pecking away at our next *Innovations* issue; look for it in November. *Deborah Snoonian, P.E.*



(184)



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Mold May Not Be a Severe Health Menace, but It Is Still a Complex Problem

ARCHITECTS MUST UNDERSTAND AIR, HEAT, AND MOISTURE FLOW TO ACHIEVE BETTER AIR QUALITY

By Nancy B. Solomon, AIA

The images are haunting: greenish-black fuzz advancing across ceilings and pink splotches blooming on vinyl wall coverings. Hotels close for months at a time to remove unsightly and destructive invasions, juries award hundreds of thousands of dollars to plaintiffs who believe toxins from such growth have seriously compromised their health, and property insurers have begun inserting language into owners' policies to spell out what, if any, mold damage they cover. Has mold become the asbestos of our generation?

In the sense that it has the power to generate insurance claims, fuel lawsuits, and whip up general hysteria, perhaps yes. According to Robert P. Hartwig, senior vice president of the Insurance Information Institute in New York, "U.S. insurers paid out at least $3 billion in mold-related claims in 2002, more than double the $1.3 billion paid the previous year." Although no building type is immune from mold, single and multi-unit residential structures, hotels, and schools seem to be of greatest concern.

According to Gita Dev, FAIA, an architect in San Francisco and chair of the AIA Housing Committee, members of the industry have become increasingly worried about mold, because its presence in a building could potentially make them liable for health-related problems. "That type of exposure is almost unlimited in dollars," says Dev, "as opposed to construction defects, for which you can figure out how much it will cost to fix."

Yet Victor O. Schinnerer & Company, the Chevy Chase, Maryland–based firm that underwrites professional liability insurance for architects and engineers nationwide, hasn't seen an explosion of mold-related claims directed at these design professionals. Vice President Lorna Parsons reports that "over time, 3 percent of our claims have involved water intrusion, which is where you get mold from, and they are still running the same to date. So mold is not handicapping the A&E profession as it goes about getting insurance and pursuing business."

Contractors, on the other hand, have been hit hard. As a result, since about 2002, a growing number of companies that provide comprehensive general liability insurance to contractors have begun to exclude mold coverage from new policies. Frank Musica, assistant vice president at Schinnerer, says that architects may one day feel the effects of this recent change. But he also thinks that the industry's growing sensitivity to the issue has introduced better procedures and products that will temper the severity of such a situation.



Mold flourishes on wallboard behind impermeable vinyl wall covering in a Florida hotel. Condensation forms when moist warm air from outdoors meets cooler spaces indoors. The vinyl traps the water, which is key to mold growth.

Nancy B. Solomon, AIA, writes frequently about building science and architectural technology and innovation.

CONTINUING EDUCATION

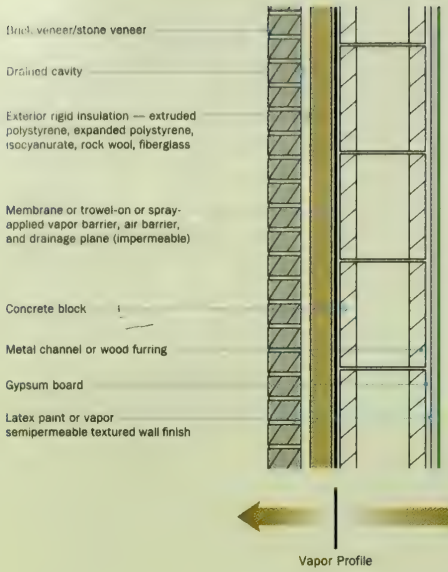
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 178 and follow the instructions. Other opportunities to receive Continuing Education credits in this issue include the following sponsored sections: "Green Product Evaluation Necessitates Making Trade-offs," sponsored by USG, page 197, and "Bright Ideas—Office Lighting 101," sponsored by Humanscale, page 192.

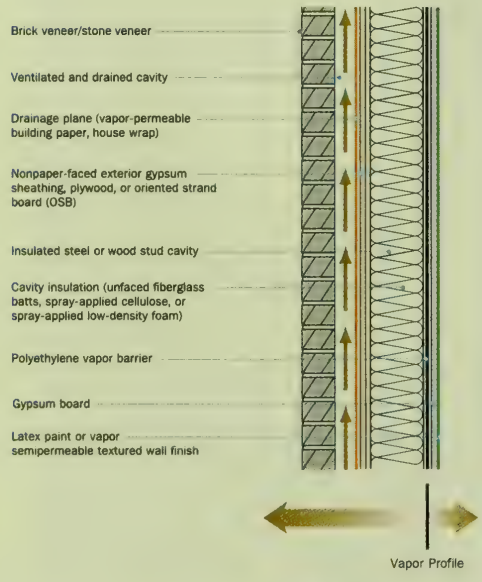
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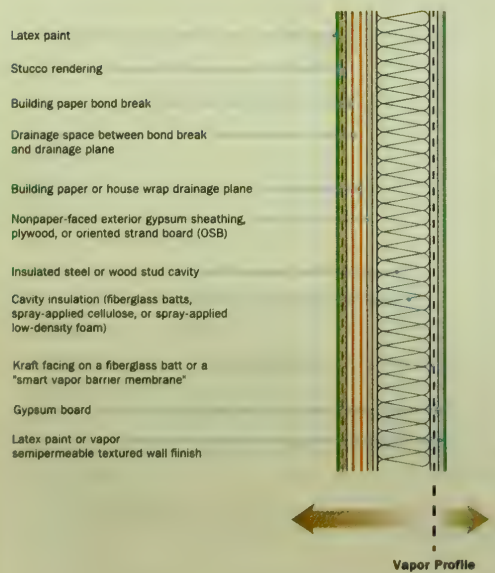
After reading this article, you should be able to:

1. *Describe problems associated with moisture in buildings.*
2. *Explain how mold spreads and grows in buildings.*
3. *Evaluate proper placement of moisture-inhibiting materials in buildings.*

For this story and more continuing education, as well as links to sources, white papers, and products, go to **www.architecturalrecord.com**.







To avoid moisture buildup, architects must consider a wall's vapor profile for a given climate. Lstiburek has proposed 16 potential assemblies, three of which are illustrated on the left: The top example can work in all regions indicated on the hygrothermal map (below); in the center is one appropriate for very cold and subarctic/arctic regions; the one at bottom is suited to cold and very cold regions. The walls have been designed to dry out to one side or the other.



Also, it's still not clear that mold is the perilous medical threat sometimes portrayed on the evening news and in courtrooms. According to *Damp Indoor Spaces and Health*, a report released in May by the Institute of Medicine of the National Academies in Washington, D.C., current research suggests that indoor mold can be linked to coughing, wheezing, and upper respiratory tract symptoms in otherwise healthy people; to asthma symptoms in sensitized people; and hypersensitivity pneumonitis (a relatively rare immune-mediated condition) in susceptible people. The committee that authored the report goes on to state that, at the time they reviewed the existing scientific literature, research had not yet established a clear relationship between indoor dampness in general—or indoor mold in particular—and the most severe health conditions that some have attributed to mold (see sidebars, right).

The committee is careful to state that it found neither "sufficient evidence for a causal relationship" nor "limited or suggestive evidence of no association for the various illnesses considered." In other words, more comprehensive studies must be undertaken to make a final determination one way or the other. The authors also stress that the "conclusions are not applicable to persons with compromised immune systems, who are at risk for fungal colonization and opportunistic infections."

Although the jury is still out as to the degree to which mold causes health problems in otherwise healthy people, the committee stated that excessive indoor dampness—which is conducive not just to mold but also to bacteria, dust mites, cockroaches, and other larger organisms, and to chemical and particle emissions from building materials (all of which may have medical repercussions)—does pose a risk to public health. The authors emphasize the importance of educating building professionals on the causes and prevention of moisture problems.

THE BUILDING INDUSTRY'S ONLY VIABLE DEFENSE AGAINST MOLD IS MOISTURE CONTROL.

So while there may be some relief to building professionals that, at least for now, there may not be sufficient evidence to prove beyond a shadow of a doubt that mold causes fatigue, cancer, or several other extremely serious maladies, mold growth must still be inhibited for the general health of occupants; to avoid the unpleasant conditions associated with it, such as odors and staining; and to maintain the structural integrity of furnishings and building materials.

Biology 101

To prevent mold, architects should first understand something about the creature. Molds are a type of fungus. Fungi occupy two kingdoms of the seven cited in the current classification system of biological organisms. Unlike organisms in the animal kingdom, which digest food internally, fungi secrete enzymes into the environment to break down material into smaller components that they can then absorb. This process serves the extremely important role of cleansing and recycling elements in nature.

The fuzzy-looking part of mold is called the mycelium, which is made up of many slender cells called hyphae. Digestion occurs at the ends of the hyphae. As the mold grows, the hyphae must continue to multiply and reach further out to gather more nutrients to satisfy the ever-larger organism. Different types of molds digest different types of foods. Unfortunately for the building industry, many molds like the cellulose in wood products; through this process, they can discolor and ultimately destroy the host material.

Molds reproduce through spores, which fly through the air with the greatest of ease. If conditions at landing are right, the spores will ger-

Summary of Findings Regarding Association Between Health Outcomes and Exposure to Damp Indoor Environments

Sufficient Evidence of an Association
- Upper respiratory (nasal and throat) tract symptoms
- Cough
- Wheeze
- Asthma symptoms in sensitized persons

Limited or Suggestive Evidence of an Association
- Dyspnea (shortness of breath)
- Lower respiratory illness in otherwise healthy children
- Asthma development

Inadequate or Insufficient Evidence to Determine Whether an Association Exists
- Airflow obstruction (in otherwise healthy persons)
- Mucous membrane irritation syndrome
- Chronic obstructive pulmonary disease
- Inhalation fevers (nonoccupational exposures)
- Lower respiratory illness in otherwise healthy adults
- Acute idiopathic pulmonary hemorrhage in infants
- Skin symptoms
- Gastrointestinal tract problems
- Fatigue
- Neuropsychiatric symptoms
- Cancer
- Reproductive effects
- Rheumatologic and other immune diseases

Summary of Findings Regarding Association Between Health Outcomes and Presence of Mold or Other Agents in Damp Indoor Environments

Sufficient Evidence of an Association
- Upper respiratory (nasal and throat) tract symptoms
- Cough
- Hypersensitivity pneumonitis in susceptible persons
- Wheeze
- Asthma symptoms in sensitized persons

Limited or Suggestive Evidence of an Association
- Lower respiratory illness in otherwise healthy children

Inadequate or Insufficient Evidence to Determine Whether an Association Exists
- Dyspnea (shortness of breath)
- Asthma development
- Airflow obstruction (in otherwise healthy persons)
- Mucous membrane irritation syndrome
- Chronic obstructive pulmonary disease
- Inhalation fevers (nonoccupational exposures)
- Lower respiratory illness in otherwise healthy adults
- Acute idiopathic pulmonary hemorrhage in infants
- Skin symptoms
- Gastrointestinal tract problems
- Fatigue
- Neuropsychiatric symptoms
- Cancer
- Reproductive effects
- Rheumatologic and other immune diseases

Source: Institute of Medicine's *Damp Indoor Spaces and Health*

minate and fungal growth will begin. Molds release microbial volatile organic compounds, which cause the musty smell, and produce allergens and, under certain conditions, toxins. The allergens and toxins are not airborne themselves but can be carried in flight with the spores. It is these allergens and toxins that are the potential medical culprits.

Spores, which are microscopic, are found virtually everywhere. There is no cost-effective way of removing them from all buildings. To germinate, they need oxygen, food, an acceptable temperature, and sufficient water. The typical indoor environment provides all these factors except possibly one: Mold requires a higher quantity of moisture (in the order of 70 percent relative humidity or higher) than is comfortable to humans (20 to 60 percent relative humidity). So, the building industry's only viable defense against mold is moisture control.

Water, water everywhere

Buildings get wet: Some building materials are made with water; others are rained on during construction. Roofs and windows leak. Pipes break. And moisture-laden air finds the path of least resistance. Despite such realities, too many architects and builders design and construct as if water will never enter the building.

This was not a problem years ago, when construction systems were more robust. Traditional materials, most of which are vapor permeable, installed according to traditional methods, could easily store a reasonable amount of moisture and allow it to gradually dissipate, as atmospheric or other environmental conditions changed, without damaging the building assembly. But as construction practices evolved over the 20th century, the balance of moisture and materials that we had come to take for granted began to change.

Modern construction systems consist of many materials that are less permeable than traditional materials and so can neither store moisture vapor nor allow it to pass. Forensic engineer Joseph Lstiburek, a principal of Building Science Corporation in Westford, Massachusetts, estimates that, on average, the water-storage capacity of materials in a typical house has decreased from about 500 gallons a century ago to about 5 gallons today. And impermeable materials placed in the wrong location—like the vinyl wallpaper that has only too often been applied to the cooler interior walls of hotel rooms in hot, humid climates—can trap moisture where it doesn't belong.



Mold grows under sheet vinyl covering a concrete floor in the Midwest because a vapor barrier had not been placed below the slab during construction, thus allowing ground moisture to penetrate the concrete.

Newer, more processed materials—such as engineered wood and paper-faced gypsum board—offer mold a smorgasbord of more easily digestible food than do the traditional lumber and plaster that they replace. "To mold, plywood is like candy and paper is pablum," says Lstiburek. So the now-wet paper on the gypsum board behind the vinyl wallpaper in that southern hotel room provides a veritable feast for the ever-present mold spores.

And our increased reliance on air-conditioning—even in northern states—means that the temperature gradient at an exterior wall can change dramatically over the year (in northern climates, colder than may be outside in winter but inside in summer), thus altering the de

"TO MOLD, PLYWOOD IS LIKE CANDY AND PAPER IS PABLUM," SAYS FORENSIC ENGINEER JOSEPH LSTIBUREK.

point, or the position at which condensation forms, and the direction vapor flow. Although it is still true that the vapor retarder, if needed should go on the warm side of insulation, in some climates it becom confusing as to which is the warmer side. Properly detailed, an air-con tioned building in Minneapolis is just as likely to have mold in t summer as one in Miami.

The scale was finally tipped after the oil crisis of the 1970s. In order to reduce fuel consumption, buildings were being better insulate Insulation, however, reduces the ability of a wall to dry out. It can al shift the dew point within the wall to a point where, if not adequate drained or vented, mold growth and other water damage can occur.

Around the same time, buildings were being fitted with mo sophisticated, energy-efficient glazings, lighting systems, and applianc These measures succeeded in reducing the heat load in buildin However, because air-conditioning systems are typically oversized, "t cooling mode does not come on often enough or long enough to allo proper dehumidification," explains Michael Garrison, associate profess



A wall cavity in a building under construction in the Northeast developed mold because materials were not kept dry prior to installation and water was entering from upper stories as they were being built.

Airing Out the Facts

ABOUT CAVITY WALL DRAINAGE

w research indicates that airflow
nasonry cavity walls is equally as
ortant as proper water drainage
can aid in quickly drying out the
nponents within the cavity.

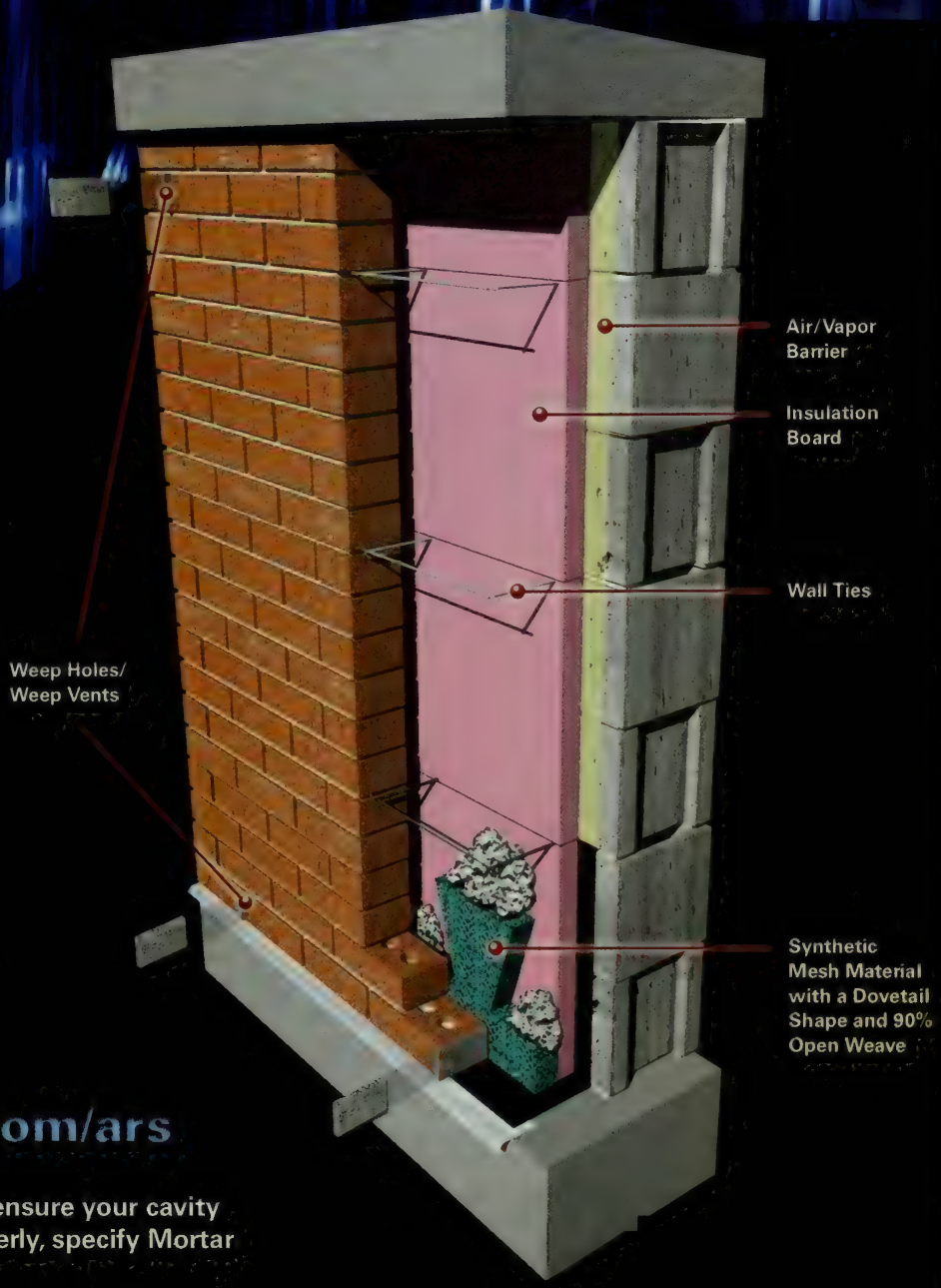
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Georgia Pacific's DensGlass Gold Exterior Guard, a paperless glass-matted panel, has become a popular choice for exterior sheathing because it eliminates paper, a source for mold if the material gets wet during construction.

of architecture at the University of Texas at Austin.

In addition, greater efforts were being made to seal buildings and maintain positive interior air pressure with respect to the outside air to prevent unwanted infiltration through inevitable small cracks in the envelope. This legitimate strategy, however, was often unwittingly compromised by localized pockets of negative pressure created, for example, by a bathroom exhaust fan or rooms that are not adequately served by fully ducted return air vents. Although the overall building may have positive pressure, these localized pockets could inadvertently draw in moist air from the outside via poorly sealed portions of the building envelope, often traveling long and circuitous distances via the complex network of relatively hollow wall cavities and plenums common in most buildings.

Meanwhile, growing concerns over indoor air quality encouraged significant air-exchange requirements that are frequently satisfied by purposely drawing outside air into the building. Unless this air is dehumidified before mixing with the already conditioned air, the extra moisture from the outside is often too much for the air-conditioning to handle, especially in hot, humid climates. If the warm moist air hits a cooler surface, such as the interior gypsum board of an air-conditioned room or the cold-water supply pipe in a ceiling plenum, the vapor from the moist air will condense and mold will form on the wallboard or on the ceiling tiles below the pipe. In its effort to save energy, the industry forgot about the properties of moisture.

This complex combination of multidisciplinary and sometimes competing interests and seemingly invisible forces unintentionally created a situation in which greater amounts of moisture were being trapped in inappropriate places for longer periods of time and coming into contact with more vulnerable materials, leading to mold and other health and construction concerns. And because HVAC systems provide such efficient distribution pathways, conditioned air that has become contaminated with mold has sufficient opportunity to spread spores, odors, and potential toxins around for people to inhale, caus problems to multiply.

To make matters worse, certain standards and codes have b written and adopted that, in some regions, unintentionally exacerb the moisture problem. According to Lstiburek, the state of Minnes requires insulation and a vapor barrier on the interior of a basement w blocking the only direction in which the subterranean wall could possi dry out; and in Miami, where the air in the attic is typically drier than outdoors, ventilation systems originally designed to take moisture out a humid attic in the north are inappropriately required. Lstiburek a believes that the amount of fresh air that is often brought into comm cial buildings (currently stipulated at 20 cfm/person by ASHR Standard 62.1, "Ventilation and Acceptable Indoor Air Quality") is high: In hot, humid climates it actually brings too much moisture insi thus causing the very problems that the standard intended to prevent. stating that "some existing codes may inadvertently promote dampne the Institute of Medicine's report supports Lstiburek's contention that least in some regions, the moisture problem has become institutionaliz

An integrated solution

Fortunately, the conditions that lead to dampness and mold are genera understood by building scientists who study these phenomena, a strategies to prevent such problems are available (see resource table helpful organizations and Web sites on page 178).

For architects to apply many of these strategies, it is criti that they become familiar with the natural flow patterns of air, heat, a moisture, which follow from basic laws of physics: Heat flows fr warm to cold; moisture flows from warm to cold and from more to l (but, Lstiburek adds, "if these two are different, which is highly unusu 'more to less' beats 'warm to cold' "); air flows from higher to lo pressure; and gravity acts down.

Susan Doll, an associate at Environmental Health Engineering, in Newton, Massachusetts, encourages architects to thi about moisture dynamics: "Where does it come from—outside clim or interior activities (such as cooking, bathing, or even breathing)? A where does it go—into materials, air, or a condensation pan?"

To prevent mold from becoming a building problem, let alo a potential health menace, architects must minimize the amount

TO PREVENT MOLD FROM BECOMING A PROBLEM, ARCHITECTS MUST MINIMIZE WATER ENTERING A BUILDING.

water—both in liquid and vapor form—entering a building, prov methods or details for it to be removed if and when it does enter, a specify materials appropriate to the moisture conditions. Appropri strategies range from the obvious, such as sloping grade away from structure and properly flashing all envelope penetrations, to the m obscure, such as thoroughly sealing the envelope with air barriers and ating consistent positive pressure throughout the building—even wit wall cavities, ceiling plenums, and areas that house mechanical equ ment—so outside air is not drawn in accidentally by the HVAC syst

Recognizing the multidisciplinary, multiphase, and regio variations of the moisture and mold problem, some clients who repe edly build in different parts of the country are beginning to en moisture experts to monitor all facets of a project, from building en lope to mechanical systems, that affect building moisture at the vari phases of design and construction. David Odom, senior consultant w



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Liberty Building Diagnostics Group, a building-forensics firm in Orlando, Florida, has worked with the Walt Disney Company, the U.S. Army, and now Harrah's Entertainment, which is headquartered in Las Vegas but operates casinos around the country. As an independent consultant, Odom conducts design peer reviews that focus on building performance rather than initial cost, schedule, or constructability, which are already being considered by many other team members. He looks for problem areas and standard-of-care issues, as would an expert witness in a lawsuit. "We lead the team through that process when it is not adversarial," says Odom. "By doing so, it forces everyone to better define how the building will likely operate once it's constructed."

And for those projects that don't have the budget for this added layer of scrutiny, Gita Dev suggests that architects be more careful about which mechanical engineers they work with and pay more attention to construction administration. "The architect must be extremely demanding that details be met, and point out potential issues to the owner," says Dev.

The mold story may, strangely enough, have a happy ending: Armed with knowledge of mold and its prevention, architects may be in a better position to convince building owners, who are increasingly fearful of the fuzzy fungi, to spend a little more on quality design, construction, and on-site observation to prevent a future invasion of the nasty gunk. The result could lead to better quality design and construction overall. ■

Mold Prevention Resources

The following public and private organizations offer a range of useful information on mold prevention and mitigation:

Building Science Corporation
www.buildingscience.com/resources/mold

Energy & Environmental Building Association
www.eeba.org

Florida Solar Energy Center
www.fsec.ucf.edu

MidAtlantic Environmental Hygiene Resource Center
www.mehrc.org

NAHB Research Center's ToolBase Services
www.toolbase.org

U.S. DOE's Building America Program
www.buildingamerica.gov

U.S. EPA's Indoor Environments Division
www.epa.gov/iaq/molds/moldresources.html

CDC's National Center for Environmental Health
www.cdc.gov/nceh/airpollution/mold

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "Mold May Not Be a Severe Health Menace, But It Is Still a Complex Problem" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 226).**
- **Fill out and submit the AIA/CES education reporting form (page 226) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. The *Damp Indoor Spaces and Health* report stated that excessive indoor dampness is conducive to all except which?
- **a.** mold and bacteria in buildings
- **b.** dust mites and cockroaches in buildings
- **c.** chemical and particle emissions from building materials
- **d.** health problems in people with strong immune systems

2. Mold is which type of organism?
- **a.** animal
- **b.** insect
- **c.** fungus
- **d.** bacteria

3. What causes mold to have a musty smell?
- **a.** mixing with moisture
- **b.** colds release VOCs that smell
- **c.** when mold spores land they release the smell
- **d.** mold releases the smell as it digests food

4. Which percentage of relative humidity is not conducive to mold growth?
- **a.** 95
- **b.** 85
- **c.** 75
- **d.** 65

5. Which percentage of relative humidity is not comfortable for humans?
- **a.** 65
- **b.** 55
- **c.** 45
- **d.** 25

6. Mold has become a recent building problem because of modern construction materials that are which?
- **a.** moisture storing
- **b.** moisture transferring
- **c.** moisture impermeable
- **d.** mixed with water before hardening

7. Vapor will cause moisture to grow in which condition?
- **a.** when warm moist air hits a cooler surface
- **b.** when cool moist air hits a warmer surface
- **c.** when warm dry air hits a moist surface
- **d.** when cool dry air hits a moist surface

8. Increasing the draw of outside air may not solve mold problems because of which factor?
- **a.** the heat of the outside air may be too much for the A/C unit to cool
- **b.** the velocity of added air may be too much for the A/C to handle
- **c.** the pollutants from the outside air may be too much for the A/C unit to clean
- **d.** the extra moisture from the outside air may be too much for the A/C unit to dehumidify

9. To prevent mold from becoming a building problem, architects must always do which?
- **a.** minimize the amount of fresh air entering a building
- **b.** provide methods for mold to be removed from a building
- **c.** specify materials appropriate to the moisture condition
- **d.** thoroughly seal the building envelope

10. Which of the following statements is not true?
- **a.** heat flows from warm to cold
- **b.** moisture will flow from warm to cold before more to less
- **c.** moisture flows from more to less
- **d.** moisture flows from warm to cold



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MANUFACTURED STONE VENEER

Tech Commentary

Why building information modeling isn't working ... yet

By Ken Sanders, FAIA

"Are you doing it?" During last January's Technology in Construction conference in Orlando, Florida, designers posed that question to each other about building information modeling (BIM), long billed as the technological sine qua non for efficient and cost-effective design and construction. But most designers, it seems, are taking a wait-and-see attitude about BIM—interested in its benefits, but hesitant to adopt it unless assured of a return on the significant investment it entails. Nearly 10 years after his seminal book, The Digital Architect, *was published, architect Ken Sanders weighs in on the BIM discussion.*

Building information modeling (BIM) is the latest rebranding of a 25-year-old idea that architects should create intelligent 3D models instead of paper drawings to communicate design ideas and guide construction. Today, it's hard to peruse a professional journal or an AIA practice conference agenda without reading about BIM, and software vendors and consultants continue to promote it as the solution to waste and inefficiency in building design and construction. After all, why can't we make buildings like Boeing makes airplanes?

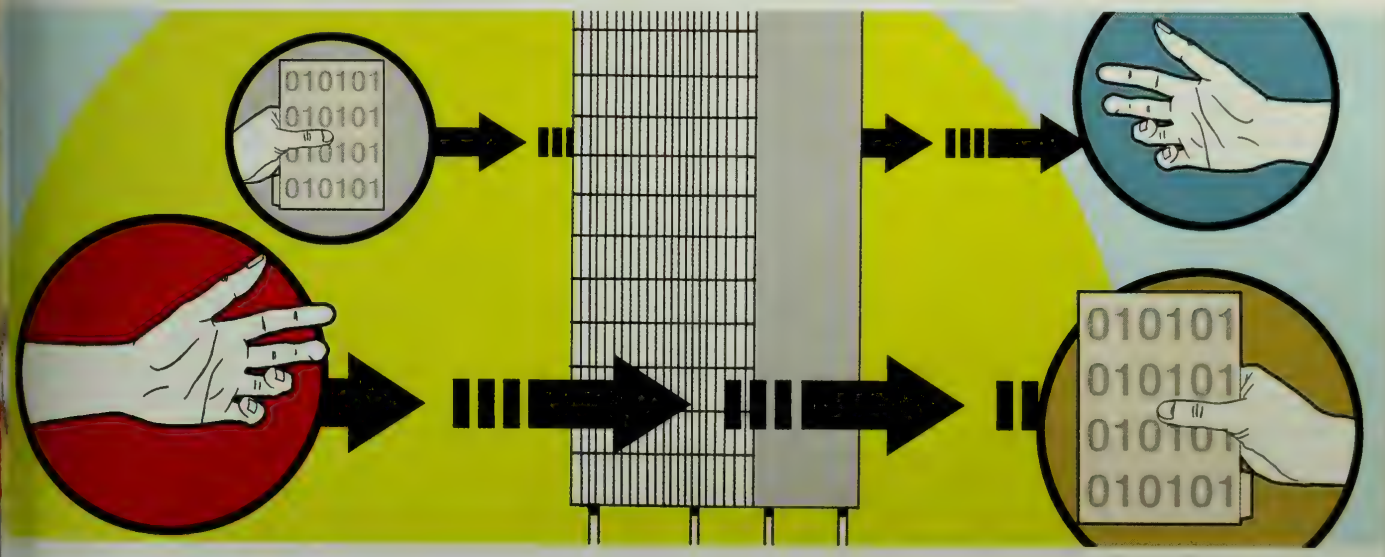
Yet, after decades of research, software development, and consultant evangelism, the industry has yet to reach the tipping point where a critical mass of owners, designers, and builders embrace the methodology and its use becomes commonplace. If the idea is so strong and the return on investment so attractive, why hasn't that happened? A decade ago, the technology seemed two or three years away; today, it still seems two or three years away. Like the dilemma confronting TV weatherman Phil Connors, played by Bill Murray in the film *Groundhog Day*, how and when will we awaken to a different reality?

Ken Sanders, FAIA, is chief information officer and managing principal of design and delivery systems at Gensler Architecture in San Francisco.

Wheels and wings versus bricks and mortar

The design community must first recognize the differences between the design and construction industry and manufacturing industries that create mass-produced products. As software developers borrow ideas from the latter industries, they also need to recognize what makes ours unique: how its economics are different, and how creating complex, one-of-a-kind products requires a broadly distributed, specialized work effort and method of decision making.

The automobile and aerospace industries, for example, enjoy economies of scale that building design and construction don't. Mass production allows amortization of costs: It's easier to pay for detailed digital models, including initial and ongoing training costs for personnel, when you're building hundreds or thousands of the products being modeled. Products that can be easily transported are more suitable for start-to-finish factory construction—but unlike airplanes or cars, the final assembly of most buildings must occur on-site. Even when architects and contractors offer services that involve customized mass production, such as implementing a new retail store prototype, they confront a dizzying array of conflicting local codes and regulations, as well as varying standards and methods of the local



Tech Commentary

construction trades. Finally, and most importantly, cars and planes are the products of an *integrated* design-build process: The designer and builder are one and the same entity. This is rarely the case with building design and construction.

Do these differences mean that architects shouldn't pursue new delivery methods, or investigate new technologies, or adapt ideas from other industries? Of course not. But recognizing the distinctions is an important first step.

Paving new roads

Although BIM has yet to achieve widespread use among design firms, many new buildings realize the benefits of digitally enabled manufacturing each day. A variety of building components and subsystems are factory-built using digital processes: doors and windows, carpets and fabrics, furniture systems, mechanical equipment, elevators. Although our profession has benefited from these manufacturing innovations, most architects can neither claim credit for them nor extract much value from them.

Some architects are collaborating with manufacturers to accelerate this trend. In their fascinating book *Refabricating Architecture* (2004), for example, architects Stephen Kieran and James Timberlake describe how increasing the size of premanufactured "chunks" of buildings, and reducing the number of assembly joints between them, can help lower costs and streamline construction.

The key prerequisite to achieving these innovations, however, is *not* more digital technology. It is creating new partnerships between owners, designers, and builders; developing organizational cultures and educational programs that support them; and inventing new delivery processes to leverage them. Gehry Partners is often held up as the paragon of this approach, and rightly so: The firm collaborates directly with contractors, fabricators, and suppliers in order to realize Gehry's unique designs, and strives to overcome the legal and institutional barriers that impede the process.

Without these fundamental changes in the culture of our profession, the value opportunity of BIM will remain out of our reach. Trying to implement BIM without first focusing on organizational transformation is like trying to drive a car on an ungraded, unpaved road: It's a long, hard slog.

Timing the market

Where is the client demand for BIM? After starting slowly during the 1980s, the adoption of 2D CAD among design firms rose quickly in the early 1990s as owners began requesting digital drawings from architects, and powerful computers became cheap and ubiquitous enough to deliver them cost-effectively. More than 10 years later, however, broad client demand for 3D building models has yet to materialize.

IMPLEMENTING BIM WITHOUT CHANGING ORGANIZATIONAL BEHAVIOR FIRST IS LIKE DRIVING A CAR ON AN UNGRADED, UNPAVED ROAD: IT'S A LONG, HARD SLOG.

A modest but growing number of public and private clients, however, including GSA, Disney, and Intel, are starting to explore BIM and pursue integrated delivery approaches. Their common interest is ownership of facilities that extends beyond construction completion. Many clients wonder why designers and builders aren't offering new delivery solutions that address the unpredictability and adversarial nature of the traditional design-bid-build process. The Construction Users Roundtable (CURT), whose objective is to maintain an "owner's voice" in the industry, has emerged as a powerful advocate for process innovations. Since its founding four years ago, CURT has grown to include over 50 of the largest corporate clients in the U.S., including Citigroup, General Electric, GlaxoSmithKline, IBM, and Procter & Gamble. *[Note: RECORD publisher McGraw-Hill is a member.]*

Without a strong client advocate, or an integrated approach to design and construction, BIM technologies remain difficult to leverage. It's challenging to confront the risks inherent in implementing new processes that seem to reward one party for costs and risks incurred by another. Indeed, one might argue that it's easier and cheaper for our profession to continue to practice using our traditional methods.

But clients are clearly asking for something different. As architects, we have a professional responsibility to learn how to package our services in collaboration with those who construct our designs; to resolve the imbalance between investment and reward; and to create an integrated solution with fewer elements of risk for all parties. The growing influence of organizations like CURT highlights this as-yet-unrealized opportunity for our profession and for builders.

New perspectives

Phil Connors escaped Groundhog Day by gaining new perspectives and discarding old habits. Many in our industry should follow his lead. The AIA and Association of General Contractors (AGC), for example, should expand their collaborative relationship, focus on their shared interests, align their lobbying efforts, and work together to dismantle the legal and institutional barriers to integrated design and construction. As a first step, the AIA and AGC should work closely with insurance providers and client groups such as CURT and merge their competing design-build agreements into a single, unified standard.

CAD software developers, including Autodesk, Bentley, and Graphisoft, should also establish new collaborative partnerships a develop consistent, reliable meth for sharing 2D and 3D data amo their programs. Earlier this year, after 15 years of bitter rivalry, Microsoft and Sun Microsystems set a great example by agreeing a new framework of interoperabil between their products. Both co panies responded to customers n longer willing to shoulder the cos integrating incompatible technolo gies, and it's time for CAD vendo to do the same.

The leading candidate for st dardized digital building descriptio remains the Industry Foundation Class (IFC) standard, developed by the International Alliance for Interoperability (IAI). *[Note: RECO publisher McGraw-Hill was a fou ing member of IAI.]* The IAI needs to focus on implementing standa they've already proposed, and re ognize that rigid compliance with one-size-fits-all solution is less important than the adoption of w documented, *flexible* data-sharin protocols ("digital handshakes") among multiple software progra

In the meantime, architects shouldn't wait for any of this befo collaborating with their clients, co sultants, and contractors to deve streamlined delivery methods usi existing technology. BIM and 3D CAD aren't necessarily prerequisi to doing so; a substantial volum of reusable data can continue to reside in 2D representations of buildings. The critical path isn't BI but rather process innovation squarely focused on people, part nerships, shared expertise, and timely decision making.

With the economy on the rebound and the construction ma ket holding steady, there has nev been a better opportunity for architects, owners, and contracto to work together to reinvent and streamline the building design an delivery process. The remaining question for architects is simple: Will you lead or will you follow? ■



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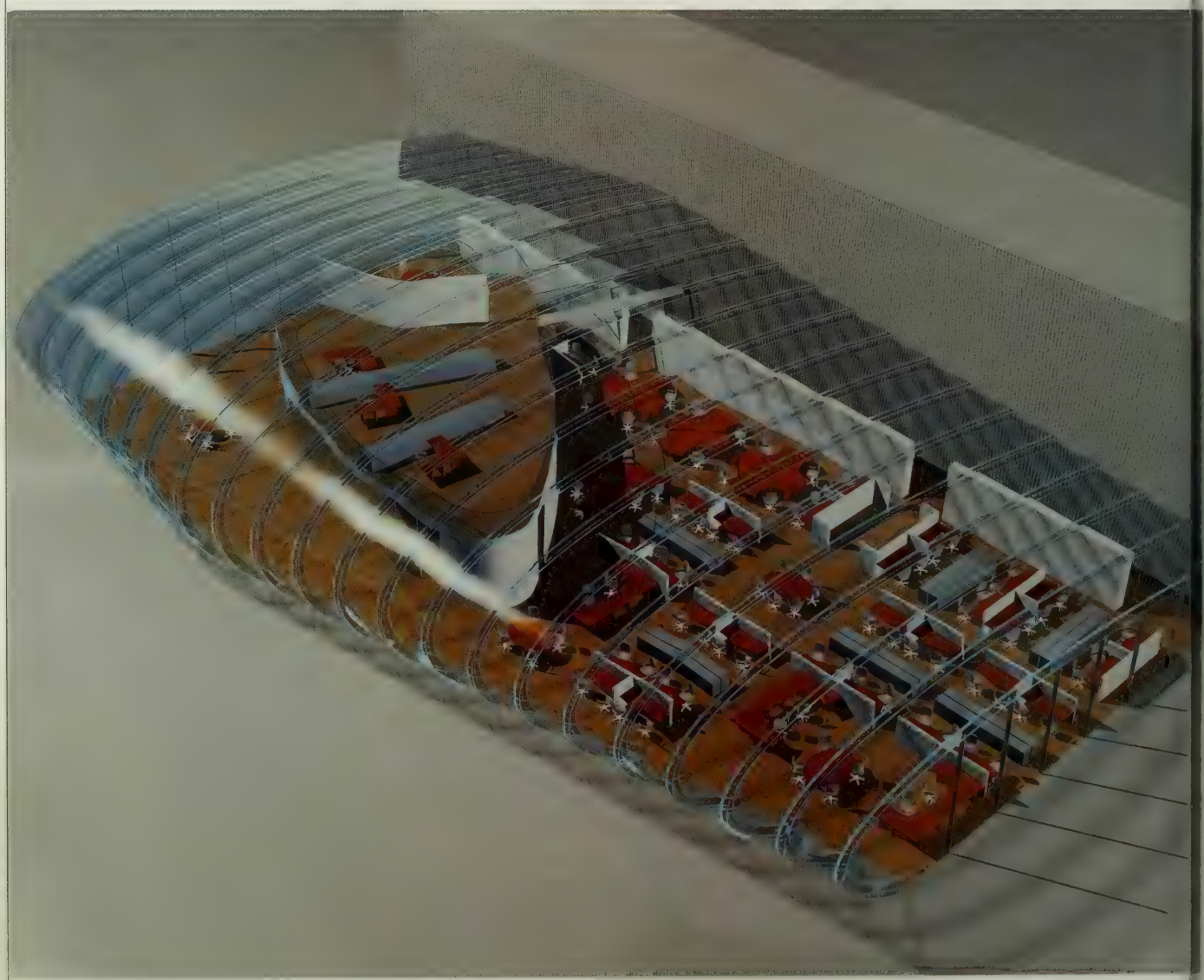
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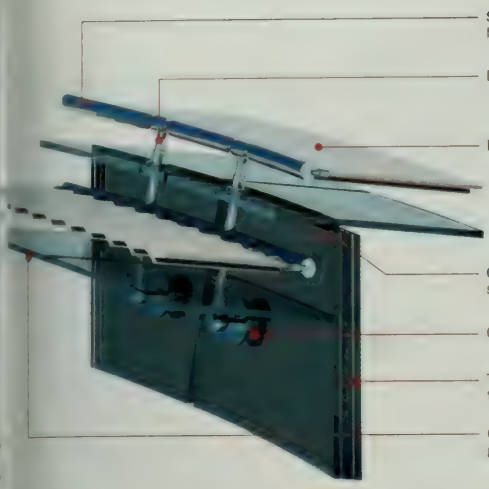
SCL Glass Headquarters & Showroom

Yatala, Brisbane, Australia

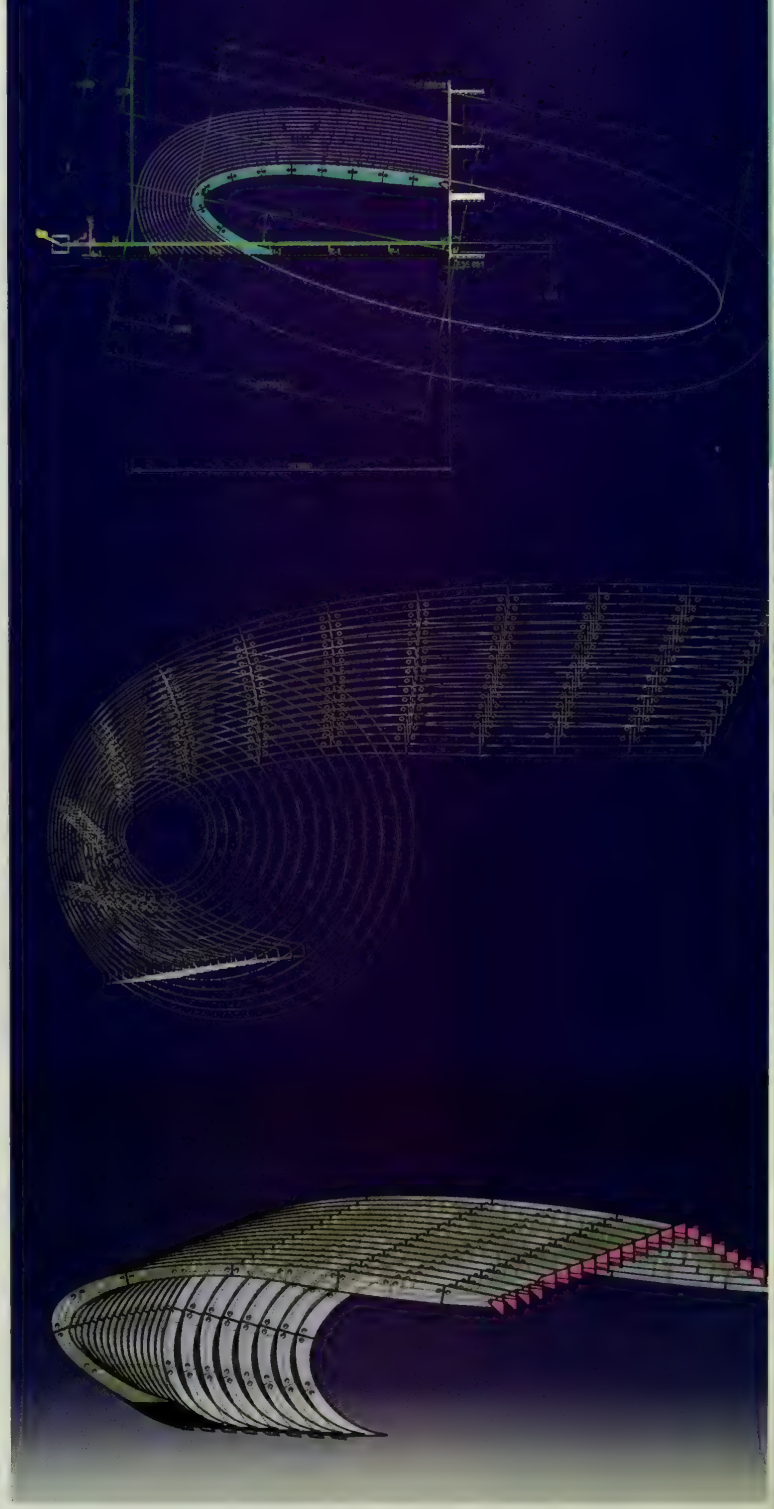
By Deborah Snoonian, P.E.

Glass—it's not just for windows anymore. When SCL Glass decided to build a manufacturing plant in Australia, they turned to Front (www.frontinc.com), a design and structural engineering firm based in New York that specializes in facade consulting, to create an office and showroom that could demonstrate the factory's capabilities. Partners Martin Riese and Marc Simmons learned the art of structura design with glass while working for the firms of Dewhurst MacFarlane and Foster and Partners. Their scheme for SCL showroom (below) will feature a 70-by-130-foot enclosure composed of overlapping, curved ribs of toughened glass. Each rib comprises multiple panels of glass, manufactured by SCL directly from digital shop drawings that Front will pr duce using CATIA. The project will be completed in fall 2005









The designers began with an elliptical shape (top), which was refined to meet manufacturing capabilities. Working in CATIA, they transformed the ellipse into radial geometry that's factory- and glass-friendly (middle). The rib forms (bottom) were refined further to express the structural forces being supported, namely the bending-moment diagram, which maximizes the structure's efficiency.

CERAMIC TILES OF ITALY DESIGN COMPETITION 2005

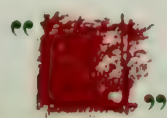
The Ceramic Tiles of Italy Design Competition, now in its twelfth year, recognizes outstanding achievement by North American architects or interior designers using Italian ceramic tile in commercial, institutional or residential installations. Projects are judged on their creative attributes as well as how they meet their functional and technical requirements. Domestic and international new construction and renovation projects are eligible.

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Ceramic Tiles of Italy

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Tech Briefs

BYTES

Later this year, in Laramie County, Wyoming, Underwriters Laboratories (UL) will open the first commercial ... testing and certification ... in the U.S., UL has been certifying wind turbines since 2002.

By 2006, the country of Singapore will implement a digital code-checking ... processing system for government projects. Designers will be ... to submit digital models of buildings in place of paper drawings for approval.

The State of California recently completed the first set of green guidelines geared toward multifamily housing. The guidelines are available online at www.multifamilygreen.org.

MIT and Loughborough University in the United Kingdom will jointly create a simulation system for the development and analysis of control systems for HVAC equipment.

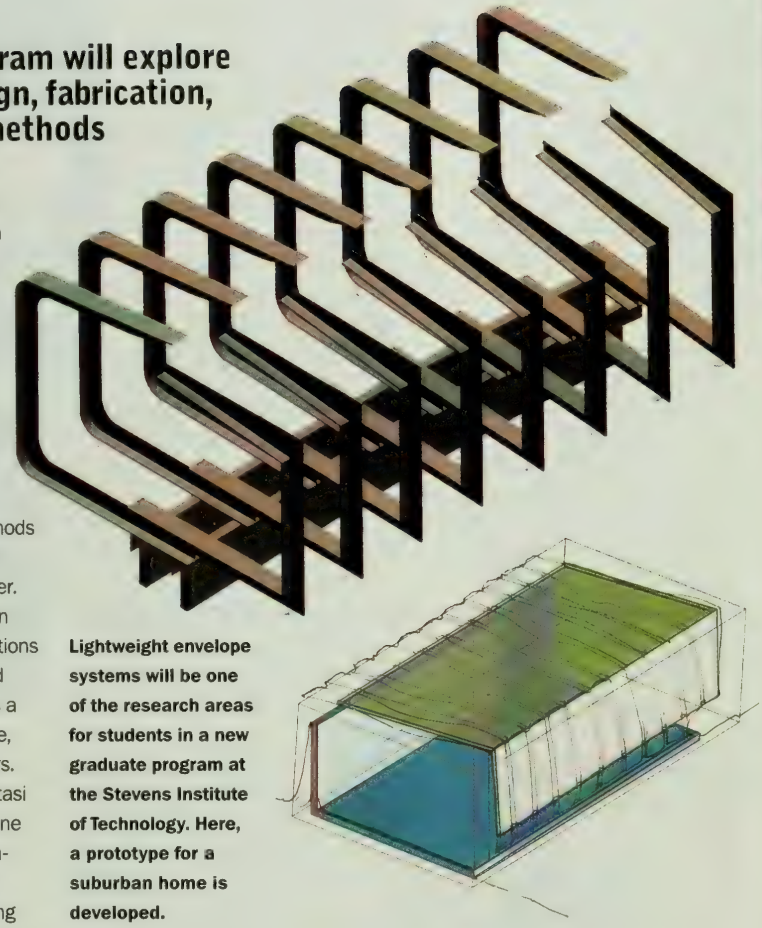
The Portland Cement Association recently announced a new initiative, the Cement Manufacturing Sustainability Program, which will provide designers with environmental information about the use of cement in construction, as well as encourage environmentally-friendly manufacturing practices.

In July, ASHRAE released a new, voluntary thermal-comfort standard that comprises a variety of building types and provides guidance for designing naturally ventilated spaces in particular climates.

The AIA and the National Institute of Building Sciences are joining forces to establish local building enclosure councils (BECs) in cities across the U.S. Each council will promote education, training, and best practices for design of building envelopes.

New graduate program will explore innovations in design, fabrication, and construction methods

This fall, 20 students will begin a course of graduate study at the Stevens Institute of Technology in Hoboken, New Jersey—the inaugural class of a new interdisciplinary program that will earn them a master's degree in product architecture and engineering. The program's founder and director, architect John Nastasi, hopes it will encourage future building professionals to embrace collaborative work methods as they strive to realize complex designs in a cost-effective manner. "The program brings into question long-standing and separate traditions in the education of designers and engineers, and in doing so forges a distinctive fusion of design culture, technology, and services," he says.



Lightweight envelope systems will be one of the research areas for students in a new graduate program at the Stevens Institute of Technology. Here, a prototype for a suburban home is developed.

Throughout his career, Nastasi has pursued projects that combine his interests in digital media, construction techniques, advanced materials, and new manufacturing and assembly methods for buildings. An alum of the Pratt Institute and Harvard's Graduate School of Design, and winner of the Architectural League of New York's Young Architect's Award in 1995, he established his Hoboken-based firm, Nastasi Architects, some 15 years ago. With its portfolio of residential and small-scale commercial work, the firm, he says, "has always been about design-build," which allows him to explore innovations more easily.

Engineering a new curriculum

Why would an architect approach an engineering school to create an academic program rooted in the training (or more accurately, the retraining) of designers? Nastasi chose Stevens because he believed he could leverage its research resources and the existing laboratory infrastructure of the school's Design and Manufacturing Institute to get the program off the ground quickly. "Right now, there are mostly token programs at schools of architecture that look at production technologies and advanced fabrication methods," he maintains. "I was being turned away by the schools I approached." Not so at Stevens, which gave him the green light to develop the program in fall 2003. Even before its inception, it has already captured the attention of innovators in the industry. Gehry Technologies and TriPyramid Structures, an integrated design and manufacturing company based in Westford, Massachusetts, are among the program's advisers and possible collaborators on future research projects.

The entering student body—a mix of architects, engineers, and product designers—will study buildings and their component parts with an emphasis on understanding design and production technologies, so that they may "seek sophisticated ways to build sophisticated forms," Nastasi says. The program is headquartered in the same building where Stevens's Carnegie Laboratory is located—a facility that boasts some $5 million worth of equipment. Stevens invested $250,000 in a new product-architecture lab—a suite of PCs and Macs; design software such as CATIA, Maya, Rhino, and ProEngineer (a computer-aided manufacturing program); video editing and digital imaging software; 3D scanners; and other gear for visualizing and producing student work.

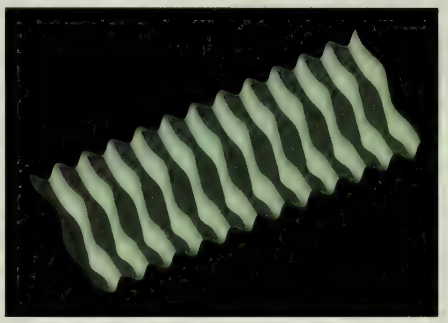
Tech Briefs

New materials and methods

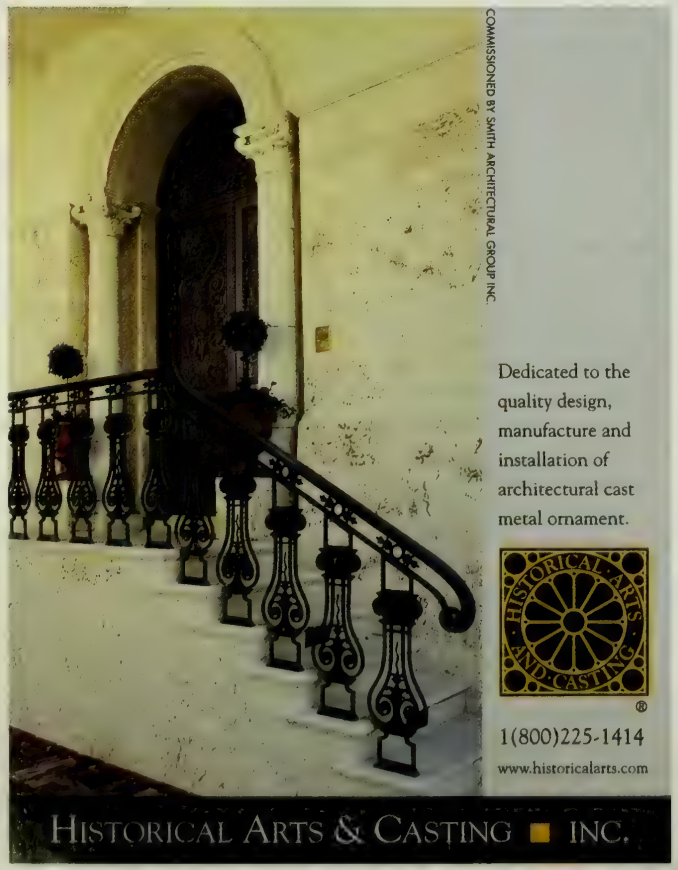
Nastasi's projects will provide fodder for student research into mass customization, lightweight envelope systems, and advanced materials. One of his ongoing efforts involves the design of a prototype for a 2-bedroom, 1,500-square-foot suburban home to be built in Woodcliffe Lake, New Jersey (top right). The house will be constructed from a kit of parts, with some subassemblies put together off-site and later shipped via truck to the building site for final erection. He's also designing a speaker pavilion in Princeton, New Jersey, for Cornel West, the academic known for his provocative explorations of religion and racial issues. The pavilion is made of an aluminum honeycomb material used in the aerospace industry; Nastasi chose it for its simultaneous opacity, transparency, and reflectivity, which plumb "the ideas of barrier, threshold, and transparency" as they pertain to both architecture and race relations.

Though interested in the theoretical underpinnings of advanced technologies and materials, Nastasi wants his students to be rooted in pragmatism—trained to make buildings, not just talk about them. They might want to follow his example: He and his design team are building the pavilion in Princeton themselves, for instance, and had to custom-build a special jig to expand the honeycomb material from its delivered thickness of 4 inches to several feet. "I have 6,000 cuts on my hands from carrying this stuff around," he said. *Deborah Snoonian, P.E.*





A complex, folded-ro structure (left) may top a suburban proto type Nastasi's firm has designed (above which would be mad of CNC-filled foam ar glass-reinforced fibe



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Tech Products

From mark-up to practice management

By Lee Anne Smith

SoftPlan reView
SoftPlan Systems
www.softplan.com
Windows only

SoftPlan, a CAD package geared to residential and light commercial construction, has recently released this addendum: A viewer and mark-up tool for non-SoftPlan users. Intended for on-site use and increased client and contractor communication during design, SoftPlan allows users to create reView files from SoftPlan drawings, then pass them on to the client, project team, builders, contractors, or others who need the information.

Mark-ups, comments, and sketches can be made directly to the reView file and then communicated through a PC or compatible handheld organizer to designers, who can then amend the original drawing files. When saving reView files from SoftPlan, users may allow viewers to print files to scale, include logos or photos, and add other "permissions" for various features. Designers can also create punch lists directly within reView files, making the add-on a handy portable tool for on-site management. To author reView files, users must purchase the plug-in for SoftPlan Version 12.5; to view and mark-up the files, a free viewer is available at the company's Web site.

Lee Anne Smith studied architecture at UNC Charlotte, where she edited the weekly student newsletter.

For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at www.architecturalrecord.com.

MediaPro 2.5
iView
www.iview-multimedia.com
Windows and Mac

For firms in search of a digital asset-management tool, MediaPro 2.5 is a program for browsing, organizing, presenting, and cataloging large image and animation libraries. Once available only for Macs, the new Windows-compatible version has made it a more feasible option for design firms.

The software is capable of handling 130 different file formats, including JPEGs, Photoshop documents, EPS files, QuickTime videos, and others. Files may be imported into MediaPro catalogs through a simple drag-and-drop technique. Users may then add tags to each file to make them readily searchable and retrievable. Tags can include keywords, dates, project numbers, location information, and even voice and audio annotations.

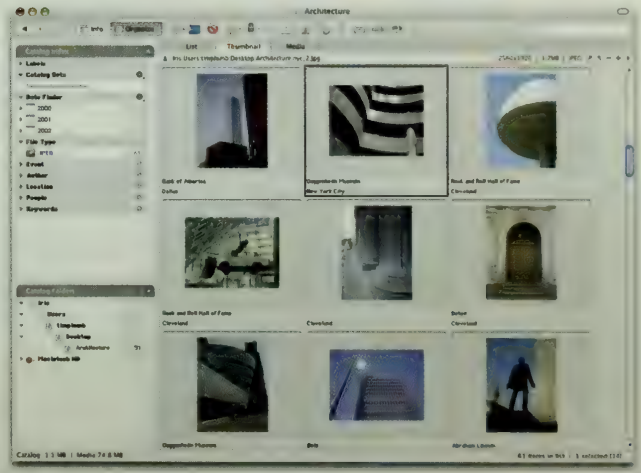
Once files are imported into a MediaPro catalog, users can organize them into folders and create custom slide shows, Web galleries, movies, PDF composites, and contact sheets directly from the software. Each catalog created in MediaPro can be exported directly to CDs or other storage media for backup. Each catalog can contain up to 128,000 files. Individual files can be viewed one by one or, alternately, shown as a file list or a set of thumbnails. A "folder-watching" feature lets users know when files have been added or updated. If desired, the tool can also be used to manipulate images—digital touch-ups are possible, as are color conversions and corrections for individual files or groups of similar files.



SoftPlan's reView tool lets users look over and mark up design drawings on either PCs or handheld organizers.

Users can leverage MediaPro's asset-management features to organize large libraries of digital photos and animation files.





Tech Products

SketchUp 4.0
@Last Software
www.sketch3d.com
Windows and Mac

SketchUp 4.0 is the latest version of this popular, reasonably priced 3D sketching tool. New features in this release include one called "Follow Me" that allows users to extrude or push a surface along a known path; "The Intersector," which lets designers connect and intersect different 3D shapes with a single mouse click; a "Texture Tweaker," in which photographs or textures can be overlaid and stretched along continuous 2D or 3D surfaces; and a new scripting interface for advanced users. The program also instinctively "fills" edges in order to render easy-to-manipulate geometries. And for projects where crisp line quality is not a necessity, such as initial concept drawings, there are options for softening the look of modeled objects.

Green Matrix
Ratcliff Architecture
www.greenmatrix.net
Windows and Mac

Once available only on CD-ROM, the Green Matrix Web site is an interactive tool that provides a template for the application and analysis of using LEED criteria in building design. Developed by a green-building design team at Ratcliff Architecture in Emeryville, California, the Web site features a matrix that cross-references the sustainability topics addressed by LEED, such as water conservation and energy efficiency, with project phases, such as master planning, schematic design, and design development. Users can click on any section of the matrix to receive an outline of recommendations for design. Cross-referencing "site sustainability" with "design development," for example, yields an outline providing information on the use of composting systems.

BillQuick 2004
BQE Software
www.bqe.com
Windows only

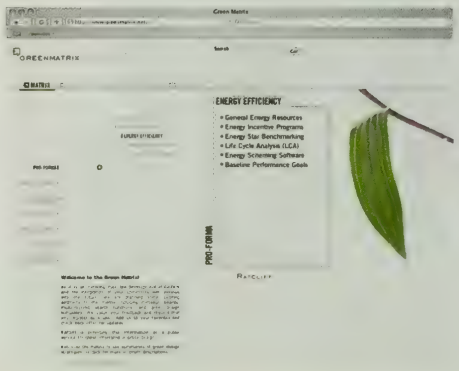
BillQuick 2004 is a time-billing and project-management package designed for small- to medium-size professional service firms. It provides a library of invoice types that can be customized for billing and maintenance of project and financial records. Fees, hourly charges, and other budget information can be scheduled directly within BillQuick for specific projects, allowing billing statements to be tailored according to individual clientele rates and contracts. Users can synchronize between BillQuick record and QuickBooks banking information to reconcile financial statements. Timesheet forms can also be set up within the software so that employees can enter hours worked on each project in as few as two keystrokes but are prevented from accessing confidential information like hourly rates.

Digital Project
Gehry Technologies
www.gehrytechnologies.com
Windows only

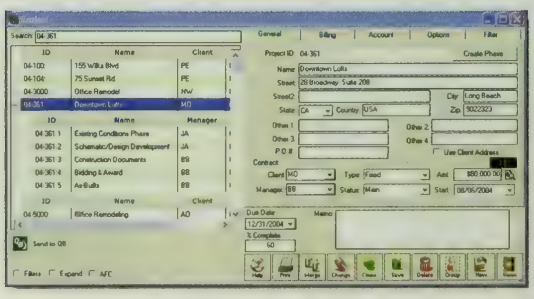
The software gurus at Gehry Partners have taken their CATIA expertise and turned it into a high-end suite of software applications tailored to manage the entire life cycle of design and construction projects. Digital Project combines a powerful 3D software engine—with parametric tools for applying, tracking, and processing intelligent models of building systems—and the ability to manage data needed to enable digital manufacturing methods. It interfaces with common data-translation standards, including DXF, and allows users to extract 2D documents from 3D models.



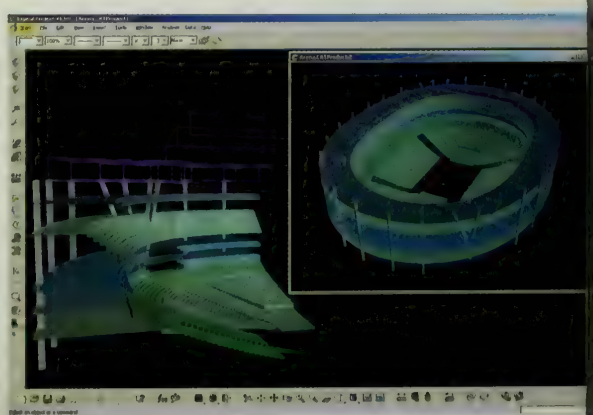
Buildings modeled in SketchUp can be overlaid onto existing photographs.



Users can click on any section of the online Green Matrix to get design guidelines for incorporati sustainable principl into buildings.



With BillQuick 2004, firms can tailor invoices for billing and record keepin



Gehry Technologies commercializes its first package, Digital Project.



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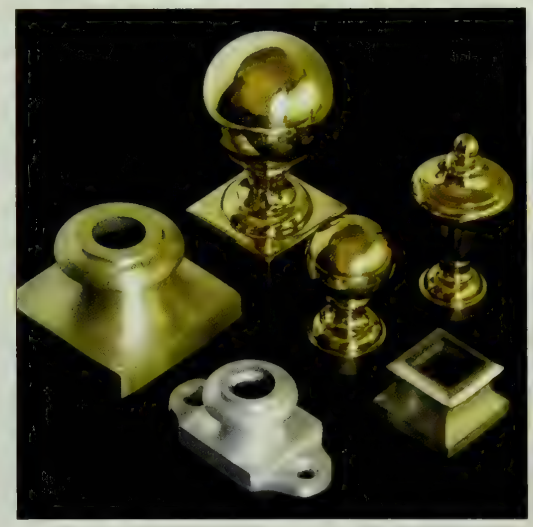
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PRESENTS

Green product evaluation necessitates making trade-offs

By Richard C. (Rik) Master, AIA, CSI
Chair Emeritus, Specifications and Building Technology, Professional Interest Area (PIA), AIA
Manager, Architectural and Construction Systems, USG Corporation

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Green product evaluation necessitates making trade-offs.**

rn one AIA/CES Learning Unit, including one of health safety welfare credit, answer the questions ıge 201, then follow the reporting instructions on 230 or go to the Continuing Education section *chrecord.construction.com* and follow the ting instructions.

NING OBJECTIVES

reading this article, you should be able to:

ter judge the sustainability of materials

ecify "green"

derstand and apply the concept of "embodied energy"

ANY WAY YOU LOOK AT IT, SUSTAINABILITY HAS BECOME A FUNDAMENTAL PRINCIPLE UNDERLYING SUCCESSFUL BUILDING DESIGN. FROM A GLOBAL STANDPOINT, SUSTAINABILITY IS IMPERATIVE, as it offers a critically important means for conserving our dwindling natural resources. From an architectural business standpoint, it's becoming an increasingly important consideration, as a growing percentage of building owners and homeowners not only desire "green" buildings, but are now demanding them.

Green has, in fact, gone mainstream. Architects are giving high priority to environmental concerns in their product selection, builders and developers are acutely aware of how sustainability can impact project success and retailers are proactively promoting green products.

Despite its growing acceptance, sustainable building design remains a complex undertaking. Because environmental issues can — and should — be considered in virtually every aspect of the design process, specifiers need to have a working knowledge of a wide range of green definitions, criteria, standards and applications. Sustainability is a long-term evaluation of every decision made, without compromise to future generations.

This article will attempt to clarify some of the issues relative to green product selections and design specifications as they relate to walls, ceilings and substrates.

Green Product Selection

Green product selection is a key component of sustainable design. However, sustainable design should also encompass life-cycle analysis, product durability, embodied energy, the effect on indoor environmental quality, manufacturing locations and the company's environmental record and commitment. In general, green products have traditionally been defined as those that reduce, recycle and renew. Specifically, sustainable products:

- *Reduce* the amount of raw materials and/or the amount of energy needed. Lighter products generally require the use of less energy for transportation, storage and construction. The term "reduce" can also refer to decreasing the amount of material used and/or wasted, thereby fostering manufacturing efficiencies and optimal use of the material.
- Offer high *recycled* content and/or environmentally friendly reuses. The benefits here are obvious. Products with a high recycled content may decrease raw material usage, energy consumption and landfill waste. "Recycle" can also refer to the potential of a product being remade into that product again or into another product as in adaptive reuse (closing the loop).
- *Renew* the environment by using materials that can be regenerated and/or materials offering environmentally friendly benefits, including renewable resources such as agriculturally based materials or products made without chemically bound methods.

Defining Embodied Energy

The virtues of these principles must be considered in terms of how embodied energy and the life-cycle environmental impact of a material affect its sustainability. Embodied (or embedded) energy is the amount of non-renewable energy required to extract, manufacture, transport and construct building products. Embodied energy is this energy studied from a beginning point of obtaining all raw materials (cradle) until a finished use point (gate or market), instead of to the end of a useful life (grave).

"Cradle to grave" is not an appropriate term if we all understand there are options to simply disposing of old building materials in a landfill. Perhaps a better name is "cradle to reuse" or "cradle to cradle:" from the beginning to a new beginning. This consideration must be factored into all green product specifications, as it can significantly – and sometimes surprisingly – impact sustainable design.

Generally speaking, products with low embodied energy are good sustainable design choices, and products with low embodied energy are usually less expensive than products with higher embodied energy. However, this is not to say that products with high embodied energy are always poor sustainable choices.

A high-embodied-energy product may provide significant savings in energy usage over the life of a building. The initial high level of embodied energy in the product is more than compensated for by its ability to reduce a building's recurring long-term energy needs (such as heating and cooling).

One aspect of embodied energy that is sometimes overlooked is the amount of energy used in obtaining the raw materials utilized in making the product. Simply requiring all construction products to be made from recycled materials is often not as efficient from a sustainability viewpoint as one would think. In fact, the energy required to recover and reuse some materials can be much greater than simply producing new materials.

Wood is a prime example of this misconception. While construction and demolition (C&D) wood waste has many reuse options, refurbished lumber accounts for a small percentage of this waste reuse. Most of it is turned into other products ranging from chip-based panels to paper products to compost.

Through life-cycle assessment or embodied energy studies, we can see the effects of recycling products back into the same products.

Assessing Embodied Energy

Up to 95 percent[1] (65 percent is a more realistic value) of aluminum's embodied energy can be saved by using recycled material. This reflects the high energy consumption required in extracting and purifying aluminum from rock (glass made from sand can yield energy savings of 5 percent.[1]) These savings are reflected in the product's cost.

While glass is inexpensive in relationship to aluminum, the recycling savings for aluminum is much greater. But should you specify aluminum over glass? It depends on the use and how it affects your total design solution.

This simple example shows the complexity involved in making product selections and developing sustainable product specifications.

So, what about other construction products? Paper, another wood-based product, is used throughout many designs. The use of secondary paper can save 35 percent[1].

Recaptured Gypsum

Most construction papers are made from the wood industry's leftovers, which include cardboard cut-offs or post-consumer papers (usually newspapers, catalogs or phone books). The face papers used on gypsum panels are 100 percent recycled paper, and some manufacturers started using recycled paper as early as the 1960s. As for the core material, which is primarily gypsum, air and starch, many manufacturers use a by-product gypsum source obtained from coal-burning power plants.

The coal burned in many of these power plants produces undesirable air pollutants, including sulfur dioxide. Wet limestone scrubbers are often used to prevent this pollution from entering the atmosphere. As the exhaust smoke from the power plant rises through the scrubber, its pollutants are chemically removed. The calcium and water in the wet limestone combine with the sulfur dioxide to create calcium sulfate, or recaptured (flue-gas desulfurized) gypsum.



Manufactured from 95 percent recycled materials, the high-performance gypsum fiber products available include interior wall panels, floor underlayments and exterior sheathings.

Recaptured gypsum currently accounts for 25 percent of the gypsum need of the U.S. construction market[2]. It is predicted that with the increased building of new power plants, the production of recaptured gypsum could account for up to 40 percent of the industry's annual gypsum requirements.

Wallboard manufactured from recaptured gypsum is indistinguishable in terms of performance, appearance and quality from panels made from natural gypsum rock. Given these benefits, the use of recaptured gypsum in drywall would seem to be a "win/win" situation. And in most cases, it is. Let's look at the embodied energy (cradle to market) of paper-faced drywall.

Obtaining raw materials accounts for less than 1 percent of the total (3.6 MJ/kg averaged across the U.S.) embodied energy, while manufacturing accounts for 80 percent[3], followed by raw material shipping (15 percent[3]) and the remainder in shipping drywall from the plant to the distributor (4 percent).

Because gypsum comprises the majority (95 percent) of the raw material, why use recaptured gypsum if a manufacturer can obtain only 1 percent energy savings? There are several reasons for this, most notably that most power plants are built near large metropolitan areas where drywall demand is very high. Second, because the plants are located nearby, we can factor the raw material shipping energy into the potential savings (15 percent + 1 percent = 16 percent).

So, should we specify recaptured gypsum drywall in all markets? First of all, recaptured gypsum is not available in all parts of the U.S. When the transportation of recaptured panels or recaptured raw materials over a greater distance is factored in, the green value of the recaptured gypsum can be diminished significantly.

In fact, the energy consumption in extracting natural gypsum is so low it equals the fossil fuel used to ship it 50 miles by diesel truck[1]. Transportation requires the use of non-renewable fossil fuels that, under certain circumstances, can negate the benefits of an otherwise excellent sustainable product selection. Therefore, specifying drywall panels simply on their recycled content versus locally produced panels may not necessarily be environmentally sound.

So let's recap drywall and look at some additional interior construction products.

Gypsum Board Panels

Gypsum board scores extremely high on nearly all sustainable design criteria. Gypsum, the primary raw material used to make gypsum panels, forms naturally like salt or limestone, and is one of the most abundant minerals on the planet. It is neither rare nor endangered. The bulk of the remaining materials in gypsum board consist of paper (recycled from newspapers, phone books, old corrugated cartons and cardboard cuttings) and corn or wheat starch binders. These starch binders, which serve as the "glue" in the manufacturing process, are renewable agricultural resources.

The embodied energy of gypsum board is extremely low (see accompanying chart). Drywall has less embodied energy than a wide variety of building products, including brickwork, concrete, particle board, insulation, glass, vinyl flooring, plastics, steel and aluminum[1]. It is also important to note that manufacturing gypsum board is a low-waste production process. In fact, approximately 95 percent of the raw materials entering a board plant leave as finished product. And most of the remaining 5 percent is recycled into small strips used to support stacks of finished gypsum panels. Overall, high-efficiency board plants can produce less than 1 percent material waste.

Construction waste gypsum panels can be reground and made into new gypsum panels when the paper is removed. This waste can also be used for many other functions, including agricultural uses or concrete set material. It is estimated that about 8 million tons of construction and demolition drywall waste are generated each year.

Other reuses for drywall include its addition as a soil amendment (using gypsum as a high-calcium fertilizer or as a method for treating high soil pH), neutralizing the high pH levels caused by road salt applications, odor treatment and concrete setting agent. The majority of this waste is from new construction cut-offs (about 6 million tons). Currently, more than 3 million tons[2] of gypsum are used as soil amendments annually and another 4 million tons[2] are used as concrete setting agents.



reen product evaluation necessitates making trade-offs.



Many acoustical ceiling panels are made from mineral wool, gypsum and smaller amounts of paper and starch, as well as other miscellaneous materials. The mineral wool is made from slag, a by-product of steel manufacturing that consists of calcium silicate and other impurities.

Acoustical Ceiling Panels

Many acoustical ceiling panels are made from mineral wool, gypsum and smaller amounts of paper and starch, as well as other miscellaneous materials. The recycled content in ceiling panels varies significantly, depending on the product type, manufacturing process and plant location. Check the manufacturer's literature to determine the recycled content of the specific panel.

The mineral wool used in ceiling panels is made from slag, a by-product of steel manufacturing that consists of calcium silicate and other impurities. The slag is melted in coke-fired cupolas or electric melters and spun into fibers that are incorporated into the ceiling panel production process. The use of slag reduces the need to mine naturally occurring materials such as basalt rock (this also reduces its embodied energy). It also decreases landfill waste (16 million cubic feet per year).

A high percentage of the paper used in the manufacturing process is recycled pre-consumer (cuttings from cardboard box manufacturing) and post-consumer (newspapers) content. The starches used as binders in the manufacturing process are renewable agricultural resources. Like gypsum board manufacturing, acoustical ceiling production is a low-waste process. Panels that are chipped or broken during manufacturing are recycled and returned to the process (manufacturing efficiencies are 85 percent).

In addition, these panels have high acoustical performance and light reflections. They can enhance the positive effect on the occupants of your design solution. Acoustical ceiling panels can be recycled into new ceiling panels if they have not been contaminated or painted. However, shipping distances need to be evaluated in terms of their impact on embodied energy.

Gypsum Fiber Panels

The gypsum fiber manufacturing process combines gypsum and cellulose paper fibers to create a variety of newly introduced high-performance panels, including interior wall panels, floor underlayments and exterior sheathings. These products are made from 95 percent recycled materials. Specifically, 85 percent of the content in these panels comes from recaptured gypsum and 10 percent is from post-consumer recycled paper fiber.



Gypsum is the primary raw material used to make gypsum panels, which score extremely high on nearly all sustainable design criteria. Most of the remaining materials in gypsum board consist of paper and corn or wheat starch binders.

The panels offer an excellent sustainable alternative to other wood-based panels, most notably lauan, which is harvested from endangered, old-growth forests.

The embodied energy[1] of these panels (5 MJ/kg) is slightly higher than that of paper-faced drywall (3.6 MJ/kg), with most of the increase resulting from shipment of the panel to market. Because these panels are relatively new to the industry, they are manufactured in limited locations and then shipped to various markets.

The recycling of these panels would be similar to that of conventional gypsum panels.

Cement Board Panels

Cement board, a water-durable, multiuse panel commonly used as a backer for ceramic tile, is made from approximately 20 percent recycled materials (fly ash). Fly ash is another waste stream material from power plant emission control processes that features cement-like properties. It is produced by electrical power companies in the combustion of coal and other solid fuels, and is subsequently purchased by concrete and cement board producers for use as an aggregate.

All products impact the environment, and the key is to reduce this impact as a goal of sustainable design. It is very important to look at the cumulative effect a material and its constituent components or processes may have on the environment, both currently and in the future.

For instance, does the material need a finish requiring solvents and adhesives? Will it need to be cleaned or maintained by using toxic chemicals? Or does the material trap dust and toxins more than an alternative material? Consider long-lasting local products that vastly reduce resource consumption, as well as other environmental impacts associated with construction and remodeling.

Green Specifications

In order to maximize the sustainable value of these – and other – building products, architects should incorporate sustainable design criteria into building specifications. Proper specification details ensure that the benefits inherent in green products are supported during the construction process and fully realized throughout the building's life cycle.

The first step in creating an effective green specification is to use a standard specification layout, such as MasterFormat™ from the Construction Specifications Institute. MasterFormat divides specifications into three categories:

- PART 1: ***General:*** *Describes general procedures and administration.*
- PART 2: ***Products:*** *Describes materials, products, equipment and systems.*
- PART 3: ***Execution:*** *Describes the proper procedures for the installation of specific products and systems into designed applications.*

The three-section format provides architects with a structure to add detailed notes and complete explanations of the environmental requirements expected for each project. There's no need to include additional sections, as this may only confuse contractors and building owners who are already familiar with the MasterFormat structure.

When creating environmental specifications, make sure to define your terms. Don't assume that users of the specification will know the exact meaning of recyclability, post-industrial materials or other environmental terms.

Also consider including the following general criteria in your specification as needed to meet the sustainable objectives of a specific project:

- Outline on-site product storage procedures. Given the fact that standing water is a common occurrence on many construction sites, materials should not be stacked on the ground and cartons should not be left opened and exposed to weather.
- Detail appropriate methods for storing and discarding construction waste that cannot be eliminated. Conduct a pre-construction meeting with appropriate contractors to discuss methods for minimizing construction waste and disposal and to explore alternative reuse options.
- Encourage the establishment of good construction practices. Realistic construction schedules will enable contractors to fully enclose buildings to minimize moisture penetration that may contribute to poor product and system performance.

Sustainable Walls, Ceilings and Substrates

Do *not* include descriptions of a project's environmental goals in the specification, such as attaining a LEED (Leadership in Energy and Environmental Design) rating in the specification. Rather, include this information as part of your instructions to bidders. As stated previously, the selection of green products is only a small part of sustainability.

For a more encompassing guideline, review ASTM E2129 (*Standard Practice for Data Collection for Sustainability Assessment of Building Products*) from the American Society for Testing and Materials and compare manufacturers' responses and backup documentation to this tool.

Note that ASTM E2129 is not a pass/fail standard, but rather a guideline by which to evaluate manufacturers' commitments to sustainability. Manufacturers should provide detailed explanations for each ASTM E2129 response, rather than just a simple "yes" answer to each question. While architects can reference ASTM E2129, they cannot require compliance to it because it is only a guideline rather than a strict standard.

Last but not least, remember the *reduce, recycle* and *renew* principles discussed previously when selecting products to include in the specification. Bear in mind, however, that effective green product selection requires a careful analysis of a wide range of factors. A product with low embodied energy, high recycled content or other obvious environmental benefits is usually a solid choice for sustainable design.

In the end, well-researched green product selections, combined with intelligent sustainable specifications, offer architects a practical and effective solution for helping conserve our natural resources, while meeting a growing demand for environmentally friendly design and construction practices.

References:

1. AtlaNews, *Embodied Energy in New Zealand Materials,* by Andrew Alcorn
2. U.S. Geological Survey, *Mineral Commodity Summaries,* by Donald W. Co
3. The Athena Sustainable Materials Institute, *Life Cycle Analysis of Gypsum Board and Associated Finishing Products,* by George J. Venta

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at: **archrecord.construction.com/resources/conteduc/archives/0409usg-1.asp**. To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, contact USG at (800) USG-4YOU. The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Better judge the sustainability of materials*
- *Specify "green"*
- *Understand and apply the concept of "embodied energy"*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 230. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website — *archrecord.construction.com* — to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. The amount of non-renewable energy required to extract, manufacture, transport and construct building products is termed:
 a. embodied energy
 b. synergystic energy
 c. transformation coefficient
 d. utility
2. A high-embodied energy product may provide significant energy savings over the life of a building.
 a. true
 b. false
3. "Recaptured" gypsum accounts for what current percentage of the overall gypsum needs of the U.S. construction industry?
 a. 15
 b. 25
 c. 43
 d. 72
4. Wallboard manufactured from recaptured gypsum is distinguished from "natural" gypsum board by its slightly green tint.
 a. true
 b. false
5. It is important to include a project's environmental goals in the specification.
 a. true
 b. false
6. Which of the following characteristics do not generally make a material a solid choice for sustainable design?
 a. high recycled content
 b. high embodied energy
 c. low embodied energy
7. It is estimated that ___ million tons of construction and demolition drywall waste is generated each year.
 a. 4
 b. 8
 c. 14
 d. 23
8. Drywall waste can be recycled as a soil amendment, as a concrete-setting agent and in the manufacture of cosmetics.
 a. true
 b. false
9. Gypsum and cellulose paper fibers can be combined to create high-performance products for all but which of the following applications?
 a. shingles with asphalt-like characteristics
 b. exterior sheathing
 c. floor underlayment
 d. interior wall panels
10. Cement board can contain 20 percent recycled content due primarily to the addition of:
 a. calcium sulfate
 b. calcium silicate
 c. fly ash
 d. polymers

About USG

USG Corporation is a Fortune 500 company with subsidiaries that are market leaders in their key product groups: gypsum wallboard, joint compound and related gypsum products; cement board; gypsum fiber panels; ceiling panels and grid; and building products distribution.

United States Gypsum Company, a subsidiary of USG Corporation, is the nation's leading manufacturer of gypsum board panels and the largest user of recaptured gypsum. The company uses more than 2.8 million tons of recaptured gypsum annually in the production of its SHEETROCK® Brand Gypsum Panels. Overall, the panels contain an average of 36 percent recycled content – 5 percent post-consumer waste and 31 percent post-industrial waste.

The company also manufactures FIBEROCK® Brand AQUA-TOUGH™ Interior Panels, FIBEROCK Brand AQUA-TOUGH Sheathing and FIBEROCK Brand AQUA-TOUGH Underlayment, all of which are made from a gypsum fiber manufacturing process that utilizes 95 percent recycled materials. These products have also earned the Green Cross certificate from Scientific Certification Systems for their high recycled content. The panels offer an excellent sustainable alternative to wood-based panels, most notably lauan, which is harvested from endangered, old-growth forests.

USG Interiors, Inc., another subsidiary of USG Corporation, is the only manufacturer to offer a limited lifetime warranty against mold growth on acoustical ceiling panels. The warranty is available on the company's ECLIPSE™ CLIMAPLUS™ and ASTRO™ CLIMAPLUS Ceiling Panels, both of which are treated with the proprietary AEGIS Microbe Shield™.

For additional information about USG's environmental practices and products, or to obtain a copy of its *Committed to the Environment* brochure, write to USG Corporation, 125 S. Franklin St., Chicago, IL 60606-4678, call USG's Customer Service Department at (800) USG-4YOU or visit the company's Web site at *www.usg.com*.

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Products

Walls & Ceilings

Wall and ceiling manufacturers continue to develop products that improve acoustics, mold and mildew resistance, and design flexibility, while furthering the ongoing effort to be sustainable. The following roundup includes a **"breathable" wall covering** and the latest 3D ceiling panel. *Rita F. Catinella*

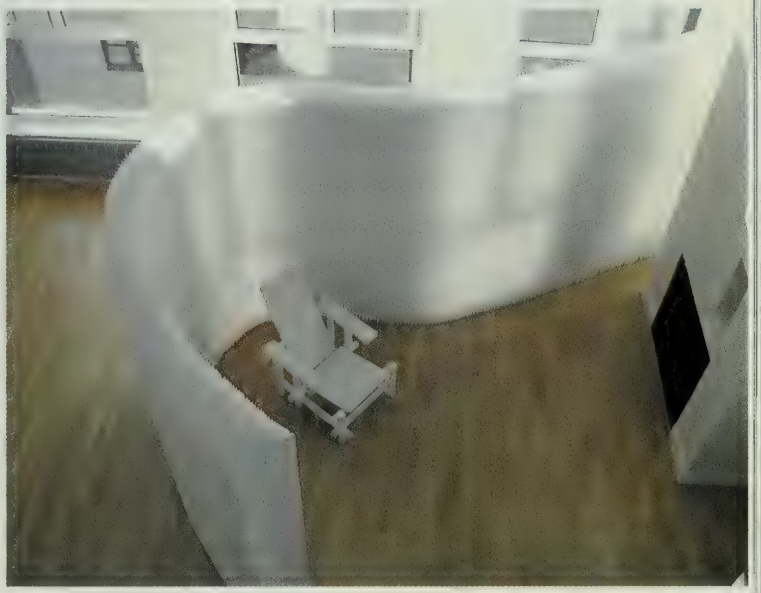
Flexible textile walls expand and compress to create rooms-within-a-room

Soft Wall is a flexible partition prefabricated from 600 thin layers of a soft, translucent, nonwoven textile. The product is currently in development by molo design, the product design firm founded by Canadian architects Stephanie Forsythe and Todd MacAllen, whose architectural endeavors include a $110 million public space project in Aomori, Japan.

Soft Wall's expandable honeycomb structure optimizes the textile's acoustic-dampening properties, can transmit or absorb light, is compressible for storage and transport, and allows the walls to open, curve, or fold away when not in use. The wall measures a mere inch in length when compressed and extends to lengths of 20' or more when expanded.

Another concept from molo design is the Soft House, a housing system that utilizes the same honeycomb structure and applies it to an enclosed room. Intended to provide a flexible relationship between the private and public spaces of the home, the structure allows rooms and walls to open in a variety of ways or completely fold away when not in use.

Working closely with a nonwoven-textile manufacturer and honeycomb fabricators, the architects are designing the material for both Soft Wall and Soft House to be flame-, U.V.-, and chemical-resistant, as well as 100 percent recyclable and made with recycled content. The studio hopes to have a 4' and 6' version of the wall available in spring 2005. molo design, Vancouver. www.molodesign.com **CIRCLE 200**



The Soft Wall (above) can create a flexible private space within a larger room.



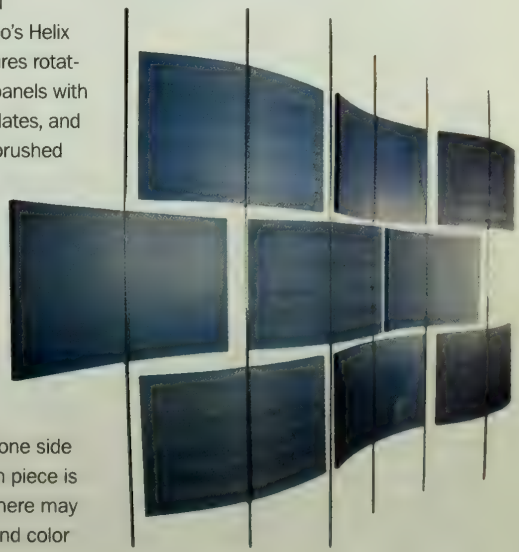
Embossed-plaster-style ceiling helps hide the grid

edges, a new suspended ceiling om Armstrong, provides architects with the 3D look and clean, mooth finish of embossed plaster t a fraction of the cost. The ceilg's design, reminiscent of Old /orld raised-panel woodwork, adds mension and architectural detailing to spaces ranging from building lobbies and corridors to hospitality and retail settings. The panel's distinctive repeating pattern also helps hide the grid system while still providing the accessibility of a suspended ceiling.

The 24" x 24" panels have a square edge detail and install easily in an Armstrong Prelude 15/16" suspension system. Ledges ceiling panels carry a Class A UL Flame Spread rating and have a Light Reflectance value of .80, meaning they reflect 80 percent of the light that strikes them to help them brighten a space. Armstrong World Industries, Lancaster, Pa. www.armstrong.com **CIRCLE 201**

Hand-cast-resin rotating partition wall

Working with poured cast resin as a base material, the L.A.-based firm em [collaborative studio] offers a range of products, including lighting, tables, chairs, and accessories. The studio's Helix 3D partition wall features rotating translucent resin panels with stainless-steel rods, plates, and collars in a mirror or brushed finish. Each 24" high x 36" long panel is separated from the next by a 3" space. The wall system shown here features mixed surface treatments, including all frosted and one side frosted/one side patterned. Since each piece is produced manually, there may be slight dimension and color variations from piece to piece. em [collaborative studio], Los Angeles. www.emcollection.com **CIRCLE 202**



r more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Resources, then Reader Service.



◄ Breathable wall covering

In response to increasing mold and mildew concerns in the A&D community, Omnova Solutions has introduced the "brease" woven-vinyl wall covering, made of approximately 60 percent less vinyl than traditional commercial wall coverings. The construction of the breathable wall covering provides higher perm ratings for greater moisture permeability. Brease is ideal for health-care, hospitality, and education markets. Omnova Solutions, Fairlawn, Ohio. www.omnova.com **CIRCLE 203**



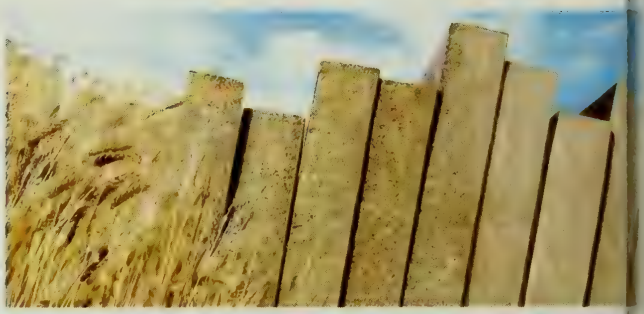
▲ Textures and shapes

USG's new Summit Climaplus Ceiling Panels (above left) feature a finely textured appearance and a surface that resists scrapes and scratches commonly caused by accessing the ceiling plenum. Available in a size of 2' x 2', the panels are nearly three times mo impact-resistant than typical finely textured ceiling panels. Also new from USG ar Billo 3D panels (right) that can be installed into standard suspension systems eit curved upward or downward. The system consists of 2' x 2' preformed, lightweigh Lexan semitransparent infill panels. USG, Chicago. www.usg.com **CIRCLE 204**

► Sound-control ceiling



With the look and feel of real oak, cherry, or poplar, Owens Corning's QuietZone Acoustyle coffered-wood ceiling system offers the style of custom millwork with integrated sound absorption. To install, prefinished coffered-wood panels and trim pieces are incorporated into a standard metal T-rail grid mounted over a high-performance, sound-absorbing material. Acoustyle joins a range of QuietZone products available from the company. Owens Corning, Toledo. www.owenscorning.com **CIRCLE 205**



▲ Wheat straw wall panels

To create their strawboard panels, Durra applies both high heat and extreme pres sure to straw fibers, coaxing out resins that act as a permanent bonding agent. Panels are then dry-extruded and finished with a strong, water-resistant liner pap The resulting panels are nontoxic and offer fire, impact, mold, and mildew resistan Durra Building Systems, Whitewright, Texas. www.durra.com **CIRCLE 206**



▲ Tall wall order

A massive new indoor athletic-practice facility at Brigham Young University, Provo, Utah, measures 222' x 422' and utilizes more than 40,000 square feet of Melt-Span's CF36A architectural flat wall panels. The 2"-thick panels were installed horizontally and comprise the top half of the wall area; the lower portion is constructed of concrete masonry. The exterior facing of the 22-gauge, nonprofiled, insulated panels is finished with custom color Fortress Stone, the interior facing is Mesa profiled with Polar White siliconized polyester coating. Metl-Span, Lewisville, Texas. www.metlspan.com **CIRCLE 207**

► Stopping sound from within

Celotex's SoundStop fiberboard product is made of 97 percent recycled or recovered wood or sugarcane fibers. The product is intended to be installed along with drywall in walls and ceilings to reduce sound in single homes, multifamily buildings, and office buildings, as well as for renovations, including loft conversions of industrial buildings. Knight-Celotex, Northfield, Ill. www.aknightcompany.com **CIRCLE 208**



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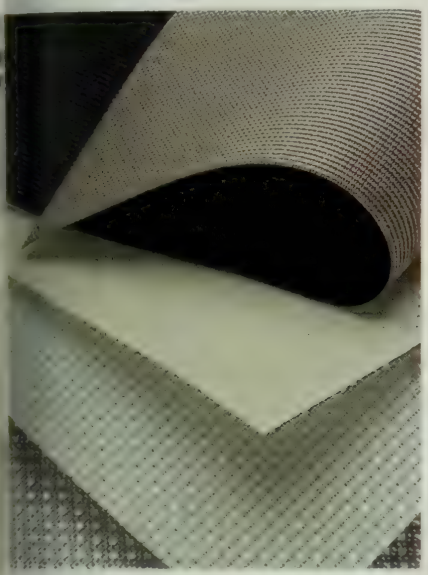
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Product Briefs

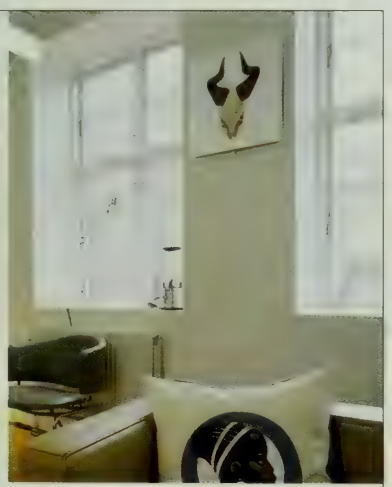
▼ Internal/external solar shading fabrics

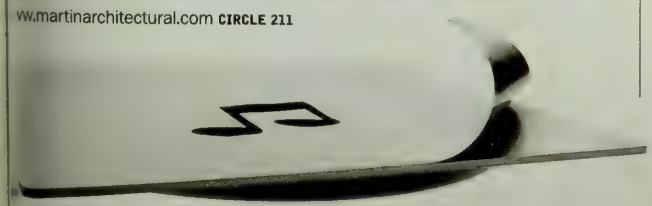
The GreenScreen line of PVC-free solar shading fabrics are designed for both internal and external contract roller shades and solar control systems. Constructed of polyurethane and a prestretched polyester core, GreenScreen is available in five levels of openness, ranging from blackout to 25 percent. The fabrics are also FR rated, meeting the strictest standards of North America and Europe. Distributed through Nysan Shading Systems, a Hunter Douglas company, GreenScreen has been installed on several recent projects, including the new headquarters of Wind NRG Partners in Vermont. Hunter Douglas Contract, Upper Saddle River, N.J. www.hunterdouglascontract.com CIRCLE 209

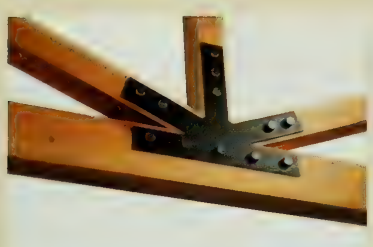


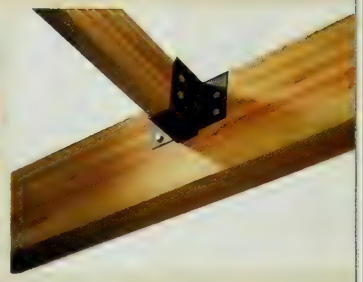
▼ Camouflaged flat-panel speakers

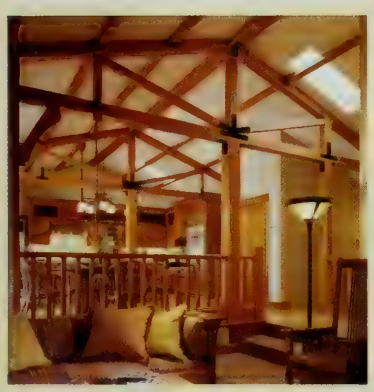
Martin Architectural's new Flat Panel speakers offer top audio reproduction in a slim speaker construction that integrates seamlessly into the interior design of a space. A collection of themed designs is available, or custom designs can be created to match any concept. For true camouflaging or flush mounting, specifiers can print or paint directly onto the Flat Speaker itself. Based on proprietary NXT technology, Flat Speakers generate sound by vibrating a plain panel surface, resulting in audio radiating in all directions. Acoustic "dead stops" are avoided by distributing the speakers evenly throughout the room with a maximum of 33' between each panel. Applications include retail environments, bars, restaurants, lounge areas, conference rooms, and airports, among others. Martin Architectural, Sunrise, Fla. www.martinarchitectural.com CIRCLE 211











Product of the Month
Architectural Products Group

Until now, connectors for exposed beams and heavy timbers had to be custom-designed, engineered, fabricated, and finished—an expensive and time-consuming process. In response to customer requests for more design options that allow connectors to be used as architectural detailing, Simpson Strong-Tie created the Architectural Products Group for interior and exterior exposed-wood applications, including beams and heavy timbers. The Group includes strap ties, column bases, column caps, beam hangers, heavy angles, joist hangers, bearing plates, and concealed joist ties, for applications including homes, hotels and lodges, educational buildings, retail outlets, and corporate office projects. Simpson's team of engineers can provide information about installation, code requirements, and wind-resistant/seismic construction. Simpson Strong-Tie, Dublin, Calif. www.strongtie.com\apg CIRCLE 210

► Fabric as a light source

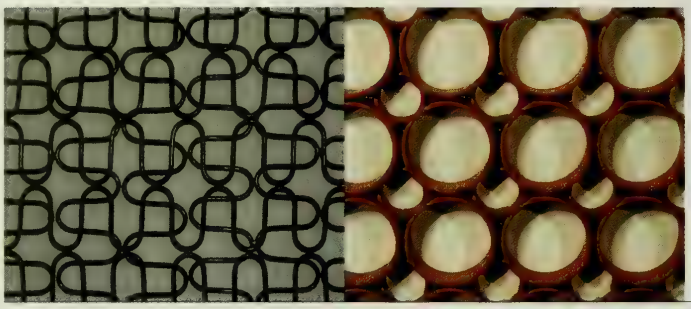


The result of a collaboration between an Italian high-tech company and a Swiss weaving company, Luminex fabric doesn't just glow in the dark—it's a light source in its own right. Composed of optical fiber woven with polyester, Lycra, or spandex fibers, Luminex connects to a LED light source and is activated by a battery or direct current. The distributor of the fabric hopes that integrating microchips will turn Luminex into smart material that can process signals like a heartbeat or body temperature and respond consistently to environmental stimuli. The company is working to produce a stratified glass with the fabric encased inside, and the material is already being used in interior design to illuminate curtains, panels, and fixed structures. Zuzka for Fabricology, New York City. www.zuzka.com CIRCLE 212

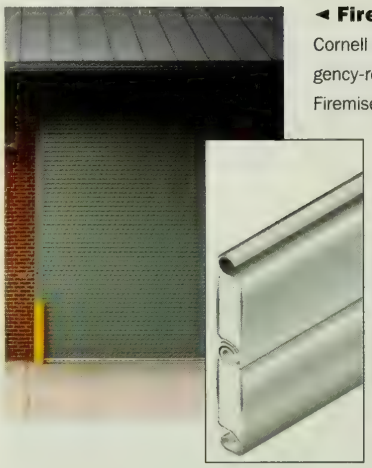
Product Briefs

▼► Brooklyn design pride

The creativity of Brooklyn was on display at Brooklyn Designs 2004, held in the borough from April 30 through May 2. Presented by the Brooklyn Chamber of Commerce, the show featured contemporary furniture, lighting, rugs, and accessories. The strongest work at the show was from woodworking companies, including Scrapile, a collaboration of designers who reshape scraps of wood from local shops to form one-of-a-kind furniture pieces, including a colorful shelf (right). Another highlight was Aswoon's custom room dividers made of materials that include wood, plaster, and plastic (below). Aswoon, Brooklyn, N.Y. www.aswoon.com **CIRCLE 242** Scrapile, Brooklyn, N.Y. www.thefutureperfect.com **CIRCLE 213**







◄ Fire-protection doors

Cornell has expanded its line of emergency-response products to include the Firemiser insulated fire door and larger SmokeShield assemblies. One Firemiser fire door from Cornell can achieve rolling steel security, up to four hours of UL-rated fire protection, plus sound attenuation and climate/smoke control. SmokeShield assemblies feature a UL-tested smoke-sealing system available in sizes up to 34' wide x 25' high. Cornell Iron Works, Mountaintop, Pa. www.cornelliron.com **CIRCLE 214**

▼ Comforting windows/doors

Hurd FeelSafe windows and patio doors give homeowners along the Gulf and Atlan coasts a storm-resistant window or patio door that meets Energy Star requiremen in their area and suits their local architectural style. New Hurd FeelSafe windows and patio doors incorporate both outside pane of impact-resis laminated glass and an insid pane of tough tempered glas to perform in hurricane conditio and optimize strength and en gy efficiency. The added strengt also gives protection from int ers, reduces the harmful effe s of ultraviolet rays, and blocks ut more exterior noise than ord ry glass. Hurd Millwork Compan Medford, Wis. www.hurd.com **CIRCLE 215**



► One tough character

Bobrick has introduced the Sierra Series solid-color, reinforced-composite toilet partitions for the school market and other heavy-use and -abuse, vandal-prone washroom environments. ASTM testing confirms Sierra's ultra-hard GraffitiOff Surface provides complete, nonghosting graffiti removal and superior resistance to scratching, gouging, and impact. Bobrick Washroom Equipment, North Hollywood, Calif. www.bobrick.com **CIRCLE 216**



► High-tech plastic panels



Based in Austria, Blizzard Composite provides translucent plastic polymer with two different honeycomb core structures. A patented lamination process allows unlimited material combinations, like acrylic skins with frosted, colored, and structured surfaces bonded to polycarbo cores. The clear-PEP and AIR-board types offer superior rigidity relative to their weight and mass and are ideal for interior and exterior cladding, canopies, floor and surfacing. Robin Reigi, New York City. www.robin-reigi.com **CIRCLE 217**

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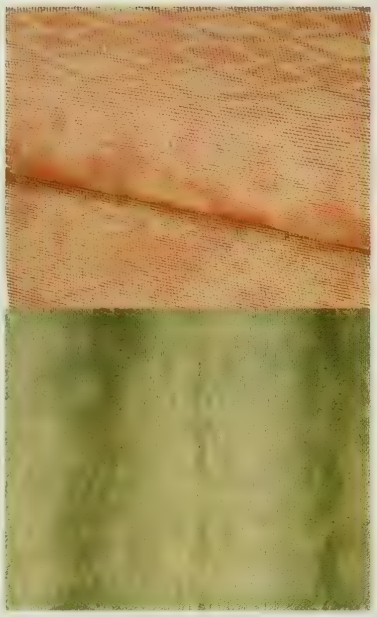
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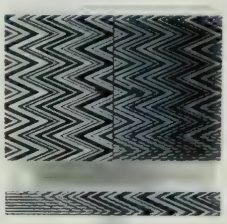
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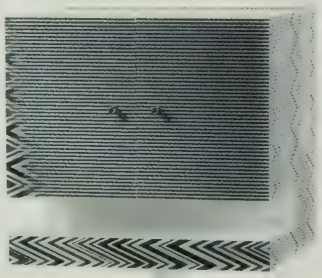
Ironically, furniture wasn't the strongest category at this year's International Contemporary Furniture Fair, held mid-May in New York City. It was the innovative textiles, carpets, and finishes that really stole the show. *R.F.C.*



◄ Animated fabric

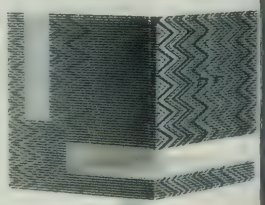
Miglus Design was honored with the Editors Award for Textiles at the show (where RECORD had a place on the jury for the first time) for an unusual woven fabric that shifts design depending on the angle from which it is viewed. Wanda Miglus, founder of Miglus Design and creator of the fabric, describes it as "woven animation" and sees applications in a range of industries, including fashion, automotive upholstery, and designer furniture. According to Miglus, any two images of patterns can be reproduced in a wide range of fiber types, using a normal jacquard loom. Miglus Design, Providence. www.miglusdesign.com **CIRCLE 218**





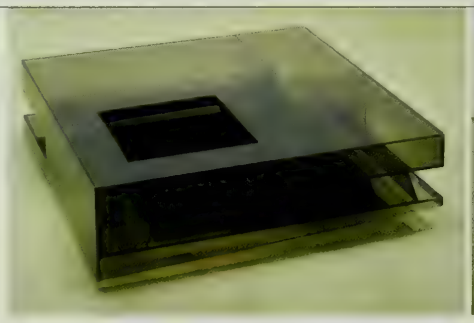
◄▼ Look at it from another angle

Blink lenticular cabinetry, from Douglas Homer, incorporates a lenticular laminate that shifts from one image to the next as the viewing angle changes. Following last year's introduction of three Blink prototypes, this year the company introduced full production models as well as BlinkSlides, a softe rounded-edge, sliding-door cabinet, and BlinkSta a stackable storage unit with a touch-latch door. Shown here is the "Nothing's On" transition imag applied to the "C" model cabinet. Douglas Homer, Downington, Pa. www.douglashomer.com **CIRCLE 219**



► Unified by gender and a love of design

Collections designed exclusively by women were a trend this year, with single-gender collections emerging at both ICFF and NeoCon (see page 216). Wonder Women, a group of furnishings created for Dune's 2004 Collection, was presented off-site during the show. Pieces include work from a broad spectrum of designers, including Eva Zeisel, Matali Crasset, Winka Dubbeldam, and Yeon Soo Son. Dubbeldam's tinted-acrylic Cumulus coffee table and Crasset's colorful, translucent-resin Chiara chairs are shown here. Dune, New York City. www.dune-ny.com **CIRCLE 220**





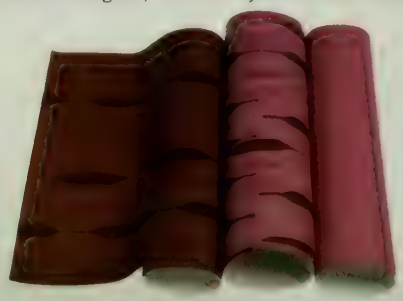


▲ Three-dimensional rugs

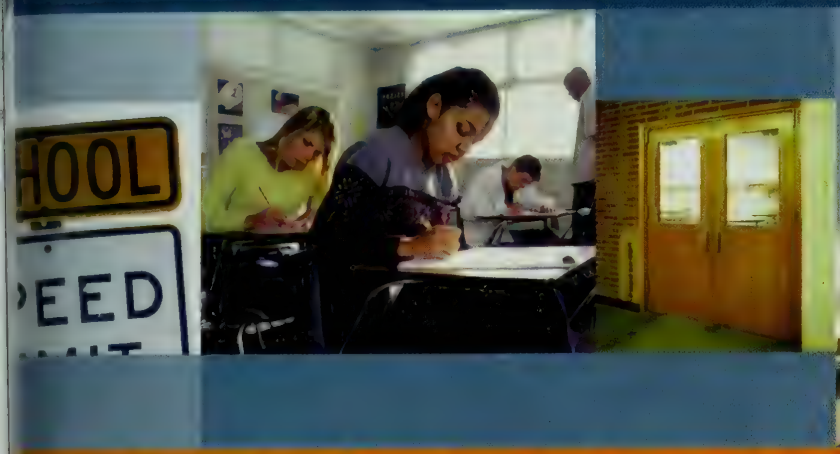
The Spanish rug company Nanimarquina displayed striking area rugs at the show and was given a top award in the category of Carpet and Flooring for its efforts. Topissimo, designed by the company's namesake, Nani Marquina, is made of 100 percent hand-tufted wool and is guaranteed to be child-labor-free. The rug is practically flat, while featuring voluminous polka dots that are available either multicolored or in two tones of the same color. The Terence Conran Shop, New York City. www.nanimarquina.com **CIRCLE 222**

▼ Scouting for new talent

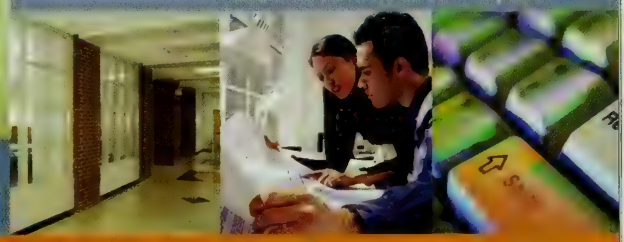
Designtex became intrigued with the upstart design studio twenty2 at l year's fair, when it introduced an outstanding collection of hand-screen wallpaper. This year, Designtex launched an award-winning collection c ated by the design studio, including nine wall coverings, three upholste patterns, and three drapery patterns for hospitality, corporate, or reside tial applications. Designtex, New York City. www.dtex.com **CIRCLE 221**



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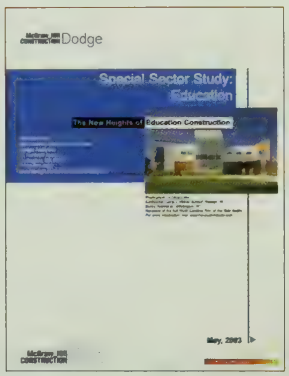
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▼ Functional sculptures

Trained in Venezuela, Leonor Mendoza has been working as a sculptor since 1990. Among her clients are the Muci Gallery in Caracas and the Art Museum of the Americas in Washington, D.C. Aside from exhibiting her work, she has been commissioned by private collectors to create original work. Mendoza has designed and built architectural pieces such as doors, handrails (below), windows, screens, and room dividers, as well as functional chairs, lamps, and coffee and dining tables. Leonor Mendoza, Brooklyn, N.Y. www.leonormendoza.com **CIRCLE 223**



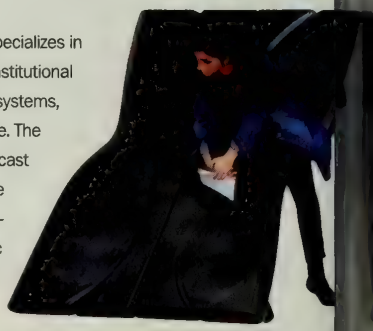


◄ Well played

Award-winning designer Richard Holbrook debute a new collection of home/office furniture at the fai inspired by the look, lightweight design, and streng of classic Gibson guitars. The first item, Lucy, is a compact desk with an overhead shelf and coordinated work tools (left). Th products are based on a new "hollo body" tabletop construction that creat a lightweight, rigid structure by fusing thin, contoured, multi-ply top skin wi a peripheral frame and bottom skin Richard Holbrook, Pasadena, Calif. www.richardholbrook.com **CIRCLE 22**

► Landscaped furniture

Based in Buenos Aires, Estudio Cabeza specializes in the design and production of urban and institutional equipment, including modular laboratory systems, precast ramp systems, and street furniture. The Topográphico bench (right) is made of precast concrete with a black color aggregate. The bench features a natural finish and a sinuous surface that evokes subtle ergonomic qualities. Estudio Cabeza, Buenos Aires. www.estudiocabeza.com **CIRCLE 225**



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NeoCon, the contract furnishing industry's premier event, attracted over 40,000 attendees in Chicago last June. A brief selection of the newest products and showrooms introduced at this year's show follows. *R.F.C*





► Keeping a good thing going

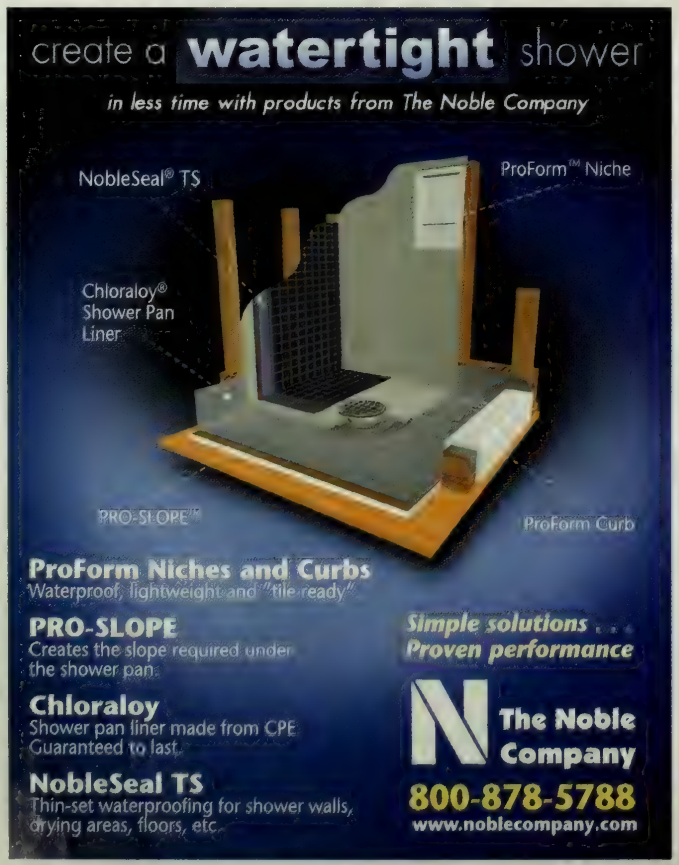
For the second year in a row, The Mohawk Group enlisted architect Shashi Caan to design its Merchandise Mart showroom to help galvanize its image, given the individual brand identities of five distinct operations—Karastan Contract, Durkan Commercial, Durkan Patterned Carpet, Mohawk Commercial, and Bigelow Commercial. A distinct feature of the space is a storage area that extends 48' down the length of the showroom and rises 7' high, which is masked by a wall that features the artwork of James Toro "carved" into a block of backlit Dupont Corian. For 2005, Caan has been tapped to develop a collection for the Karastan Contract division of the company. Mohawk Group, Atlanta. www.mohawkgroup.com **CIRCLE 226**

▼ New brand, philosophy, and showroom

Designed by Perkins & Will/Eva Maddox Branded Environments, Haworth's new showroom launched a new design philosophy that takes a holistic approach to the workspace and addresses performance through the concepts of "Work" and "Restore." A Restore Pavilion features a reflecting pool built into the raised flooring, while a Work Pavilion incorporates "Glow Walls" that offer artificial daylight and flooring used for communication. Haworth has applied for gold-level certification in the USGBC's LEED CI pilot program. Haworth, Holland, Mich. www.haworth.com **CIRCLE 227**



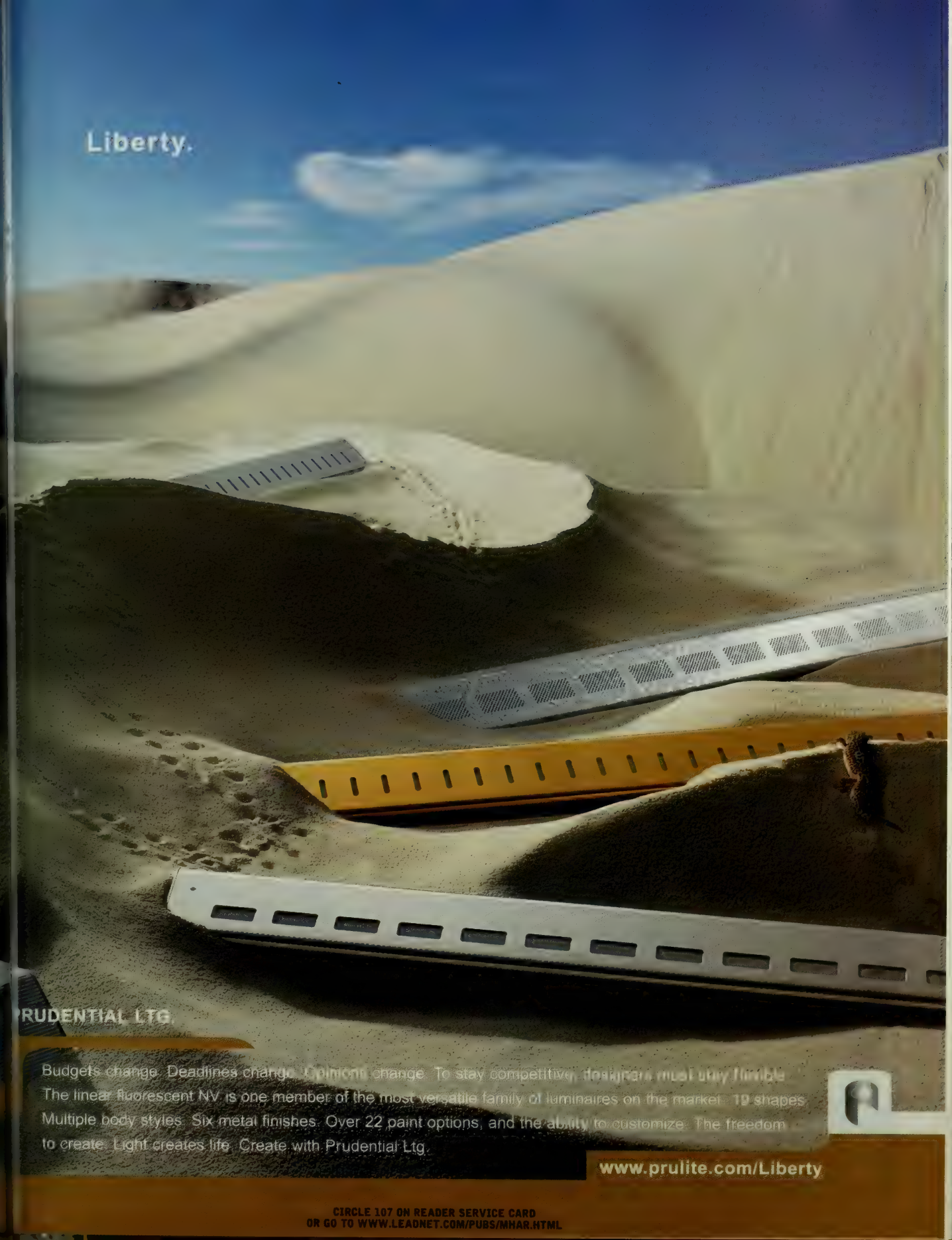
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▲ One flexible office worker

Awarded Best of Competition in this year's Best of NeoCon competition, Topo's "flex-fit" walls feature unlimited adjustment within an 18" range to increase or decrease work-setting size without additional components. Work surfaces flex-to-fit 18" laterally and 3" vertically to accommodate changing footprints, human scale, and individual preferences. As an added bonus, users may open or close their work space with sliding window screens between desks and roller screens between workstations to facilitate collaboration or concentration. Metro, Oakland, Calif. www.metrofurniture.com **CIRCLE 228**

► Female designs on furniture



According to Brayton, the 3 Women Collection is a direct reflection of the rise of talented women in design and architecture. The collection includes designs by Laurinda Spear, FAIA, founding principal of Arquitectonica; Pamela Light, a senior vice president at HOK in L.A.; and Alison Spear, AIA, a principal of her own firms in Miami and New York City. The Circa modular lounge (right) was designed by Alison Spear for the collection along with a ganging table. Brayton, High Point, N.C. www.brayton.com **CIRCLE 229**



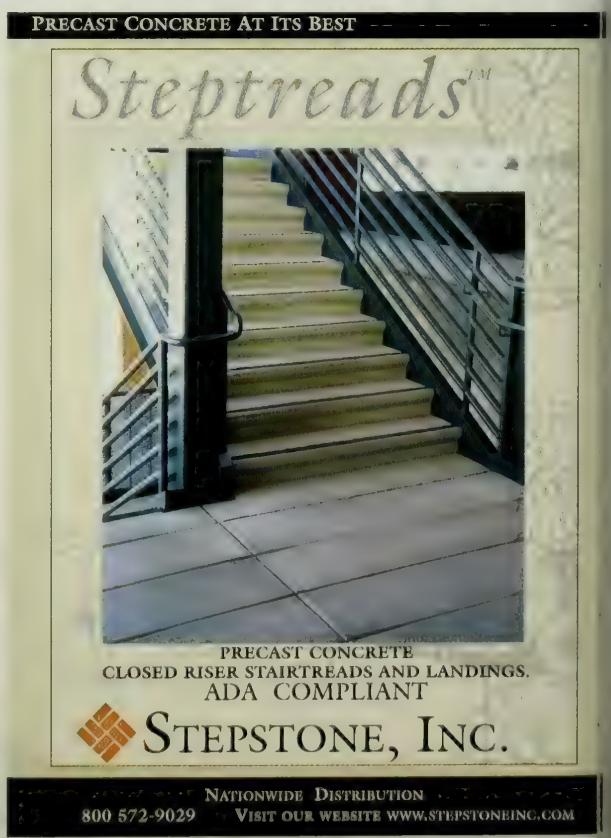
◄ Have a seat, get the scoo

One of the design goals for Turnstone's Scoop Stool was to avoid competing with the architecture of the space. Inspired by a grain scoop, the casual stool is intended for café areas, break rooms, corporate cafeterias, and other gathering spaces. The stool meets all ANSI/BIFMA standards and features a durable plastic seat and a wire rod fran available in platinum or black powder-coat paint. Turnstone, Caledonia, Mich. www.turnstonefurniture.com **CIRCLE 230**

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▲ Flexible lounge seating

The Sojourn lounge seating group from Gunlocke can serve as a place for waiting, relaxing, meeting, or working. The addition of a low side table topped by a seat-high back wood wall allows the seat to be used in the middle of the room to enclose or divide space. The addition of a tablet arm for writing or a laptop, with an accessory tray for beverages, cell phones, and pencils, allows the unit to become a place to work. Pairs of solid wood rails serve as structure to support the upper soft seating elements, arms, and walls. Accessories, such as lamps, coat hooks, and magazine racks, clamp either to these rails or to the top of the walls, and glass or wood panels drop between the rails, in place of seats or at the ends, to form tables. Gunlocke, Wayland, N.Y. www.gunlocke.com **CIRCLE 231**

► Peek-a-boo pattern

Italian architect and product designer Emanuela Frattini Magnusson, AIA, created the Askew Collection of 10 upholstery fabrics for HBF Textiles, with gray as the unifying color. The signature pattern, Hint (right), offers a layered effect with a screen of cutout circles. Peeking through the cutouts is a ground of traditional design elements, such as a red rose pattern. HBF Textiles, Hickory, N.C. www.hbftextiles.com **CIRCLE 232**

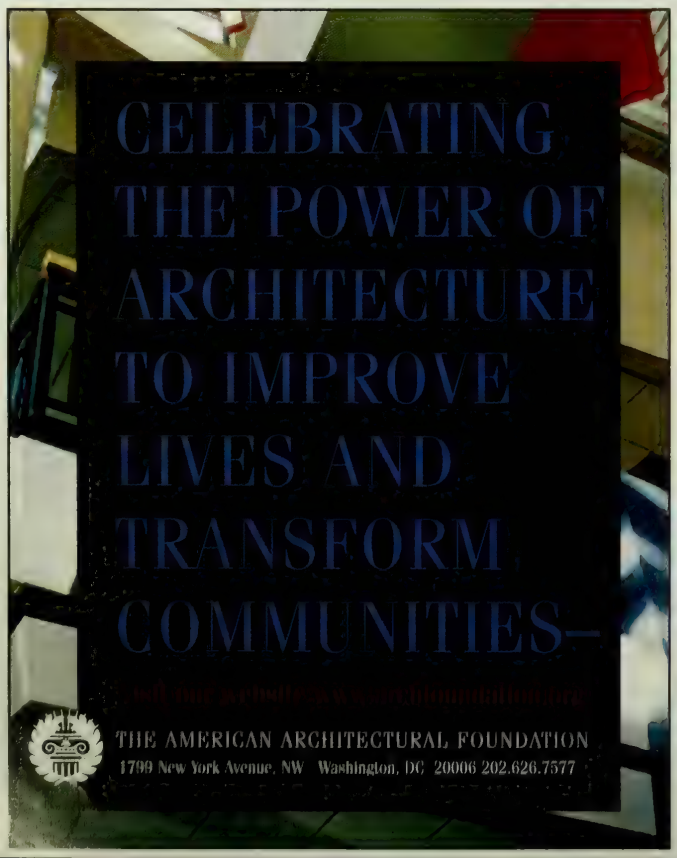




◄ Studious carpeting

The Robert A.M. Stern Library collection designed by Robert A.M. Stern Architect was one of the new collections introduc by Bentley Prince Street during the sho Consisting of four coordinating patterns ranging from large scale to small, the collection includes a plush cut-and-loop as well as tip shears. Pictured (left) is Reynolds in two colorways and Forsyth. Bentley Prince Street, City of Industry, Ca www.bentleyprincestreet.com **CIRCLE 23**

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Product Literature

Window and patio doors

Crestline Windows & Doors now offers a full-line catalog for the Crestline Select series of clad and primed wood windows and patio doors. This 116-page catalog highlights product details, with options and accessories, along with sizing and technical data. Crestline Select includes double-hung, casement/awning, gliding, bow-and-bay, and specialty-shaped and -sized windows, as well as sliding and hinged patio doors. Crestline Windows & Doors, Huntington, W. Va. www.crestlinewindows.com **CIRCLE 234**

Designer shower brochure

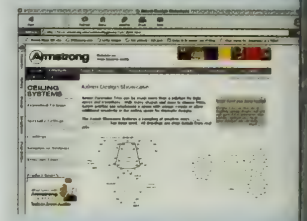
Hansgrohe has released *Showerpower*, a new, 28-page brochure that details the company's full line of high-end designer shower products. Using color photographs and "3D" drawings, *Showerpower* describes the technologies that distinguish Hansgrohe hand showers, showerheads, wall bars, and accessories. Hansgrohe, Alpharetta, Ga. www.hansgrohe-usa.com **CIRCLE 235**

Stainless-steel selection

Three new case studies illustrate appropriate stainless-steel selection in corrosive marine environments. The case studies feature common architectural outdoor applications in Hong Kong, Singapore, and the Canary Islands. Part of a case-study series published by the International Molybdenum Association (IMOA), these studies are based on the recently developed Site and Design Evaluation System. A computer program of the Evaluation System is also available from IMOA's Web site. IMOA, London. www.imoa.info. **CIRCLE 236**

NEW SITES FOR CYBERSURFING

Armstrong's Axion Design Showcase allows visitors to view shop drawings depicting various ways Axiom Perimeter



Trim can help create a signature space. **www.armstrong.com/axiom**

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III TILE OF SPAIN AWARDS OF ARCHITECTURE AND INTERIOR DESIGN

ASCER (the Ceramic Tile Manufacturers' Association of Spain), has called for entries for the third **Tile of Spain Awards of Architecture and Interior Design.** The competition was created to increase awareness among the architectural and design community of the multiple applications and benefits of ceramic and porcelain tiles produced in Spain.

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The jury is presided over this year by the renowned Spanish architect Patxi Mangado.
This third year of the Tile of Spain Awards the competition consists of two categories: **Architecture** and **Interior Design**.

_ **Architecture.** It´s open to new buildings, improvement or restoration of existing buildings, urban development and landscaping projects. Prize: 15.000 €.

_ **Interior Design.** Covers decoration of interior spaces in new buildings or as part of restoration and renovation projects, and also settings created for a short term duration (ephemeral spaces). Prize: 15.000 €.

The competition is open to all professional architects, decorators and interior designers of all nationalities.

Work submitted must make substantial use of Spanish ceramic floor and/or wall tiles in the formal part of the building. Entries must be received no later than **3rd November 2004.**



For further information:

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Product Literature

Library products line

Hale Manufacturing offers a new brochure detailing the company's line of modular library furniture at modest price points for public, corporate, school, and university libraries. Hale Manufacturing, Frankfort, N.Y. www.halebookcases.com **CIRCLE 237**

Expanded UVC catalog

Steril-Aire has published a new general products catalog showcasing its expanded line of UVC emitters for mold and microbial control, enhanced IAQ, and energy savings. The catalog describes Steril-Aire's complete line of UVC devices and accessories for commercial, health-care, food-processing, school, industrial, and residential applications. Steril-Aire, Cerritos, Calif. www.steril-aire.com **CIRCLE 238**

Hardwood flooring brochure

Junckers Hardwood introduces its full-color, 12-page *Our Products* brochure, which displays the solid hardwood flooring choices offered by the company. A short introduction to the firm's flooring options is followed by photographs and brief descriptions of each product's appearance, unique characteristics, finish, thickness, and style range. Junckers Hardwood, Anaheim, Calif. www.junckershardwood.com **CIRCLE 239**

Urethane millwork catalog

The new product catalog from Style Solutions features the addition of 223 new sizes and styles of urethane millwork pieces and 227 entirely new products. The 300-page catalog is broken into six product sections and includes information on adhesives, customer service, delivery, and detailed installation instructions. Style Solutions, Archbold, Ohio. www.stylesolutionsinc.com **CIRCLE 240**

Roofing codes manual

The National Roofing Contractors Association (NRCA) has released *The NRCA Building Codes Manual, Second Edition*. The manual provides an analysis of model building code requirements applicable to U.S. roof systems and features a list of roofing-specific reference standards, analyses of building code requirements for specific roof system types, and a timely analysis of code applicability for all 50 states. NRCA, Rosemont, Ill. www.nrca.net **CIRCLE 241**









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INNOVATION

2004 Architectural Record Innovation Conference

ember 15/16, 2004
ennium Broadway
tel, New York City

Keynote Speaker:
David Gottfried,
esident, WorldBuild,
d founder of the U.S.
een Building Council
and World Green
Building Council

Because tall buildings present so many architectural and engineering challenges, and are often well financed, they frequently inspire research and development and are proving grounds for new structural, mechanical, electrical and safety breakthroughs. The 2004 Architectural Record Innovation Conference will present case studies of the innovative aspects of three tall buildings in various stages of completion. The case studies will include presentations by individual members of the design team: architect, structural, and environmental engineers.

Building: Deutsche Post Cologne, Germany
Architect: Murphy/Jahn
Presentation Leader: Helmut Jahn

Building: New York Times Tower, New York
Architect: Renzo Piano Building Workshop / Fox & Fowle Architects
Presentation Leader: Renzo Piano (Invited) / Bruce Fowle

Building: Freedom Tower, New York
Architect: Skidmore Owings & Merrill, New York
Presentation Leader: David Childs

Ron Klemencic, Chairman, Council on Tall Buildings and Urban Habitat, will lead panelists in a discussion of the ways in which innovative technologies developed for tall buildings influence all kinds of architecture.

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C.E.U. credits will be available for the Conference Sessions on November 16th and for a Special C.E.U. Session on Fluid Applied Air Barriers presented by Sto Corp. at 4:00 PM, prior to the Networking Reception at 6:00 PM on November 15th.

or detailed agenda and registration form go to: www.construction.com/event/innovation/index.asp

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And it's all easy. See for yourself. Simply download the software at www.aia.org. For more details call 1-800-365-2724.

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October 26-27, 2004, Capital Hilton, Washington D.C.

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new work is one of the most important and ding jobs faced by any architect. At *Architectural* 's first ***Business Development for Architects*** ***ence*** you'll find out what markets will be strongest oming years and how to size up the competition. t tips on how to find project opportunities, meet l clients, get to the top of the shortlist, and e a good contract.

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RKING RECEPTION - Tuesday, October 26 - 6:00 - 7:30 PM
RENCE SESSIONS - Wednesday, October 27
NENTAL BREAKFAST AND REGISTRATION - 7:00 AM - 8:00 AM

the Work Going to Be?
wis, Regional Director, Editorial Operations, **McGraw-Hill ction Dodge,** will tell attendees where architects should find ities in the coming years.

nging Face of Competition
laker, Hon. AIA, Chief Economist, **American Institute of ts,** will tell conference attendees how AIA's recent Firm Survey at firm demographics are changing, putting different types of ompetition with each other.

How Successful Architects Find New Clients
Caldwell, Caldwell Communications, will lead a discussion by f architects who've promised to reveal what everyone wants to w they locate who's got work, how they make contact with them, they turn those contacts into jobs.

include: Frank Brooks, AIA, Chairman, **Freeman White; David AIA,** Principal, **HOK Sport + Venue + Event; Gregg Pasquarelli, ShoP/Sharples Holden Pasquarelli;** and **Scott Simpson, FAIA,** and CEO, **Stubbins Associates**

ontrol: How to Rise Above the Fray
elin, Hon. AIA, FSMPS, FPRSA, President, **Communications**
ces your firm offers are better than those offered by your competi- prospective clients don't seem to grasp this. After Joan Capelin's ion, you'll know how to stand out from the crowd of competitors. yourself short!

SPECIAL FEATURE: "A Conversation with Harold Adams, FAIA, retired CEO of RTKL". Mr Adams will be interviewed by Robert Ivy, FAIA, *Architectural Record's* editor in chief.

Why I Didn't Hire You—Clients Speak Out
Joy Habian, Assoc. AIA, Moderator
A government official, a hospital administrator, a developer, and a university official, all of whom regularly hire architects, will explain what architects do right and wrong when making proposals and interviewing.

Panelists include: Michael Allen, Vice President, **Hines; Ronald Cottrell,** V.P. Planning & Corporate Development, **Martha Jefferson Hospital; William Haverly,** Director of Capital Planning, **University System of New Hampshire;** and **Charles Matta, FAIA,** Program Coordinator, **General Services Administration**

Closing the Deal Without Losing Your Shirt
Michael De Chiara and Carol Patterson, Zetlin & De Chiara
Many architects are surprised to find that the nice people who've almost hired them begin employing tactics intended to pressure them into signing unfair contracts. Two attorneys who frequently assist architects in negotiations will show audience members what to watch for when closing, how to prevent mistakes, and when it's best to walk away.

Editorial Director: Charles Linn, Managing Senior Editor, *Architectural Record* (E-mail:Charles_Linn@McGraw-Hill.com)

Detailed agenda and registration information at
www.construction.com/event/ARBizConf/index.asp
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Program title: **"Green product evaluation necessitates making trade-offs," sponsored by USG, (09/04, page 197)** **094SPONL**

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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Program title: **"Bright Ideas—Office Lighting 101," sponsored by Humanscale, (09/04, page 192a)** **094SPONM**

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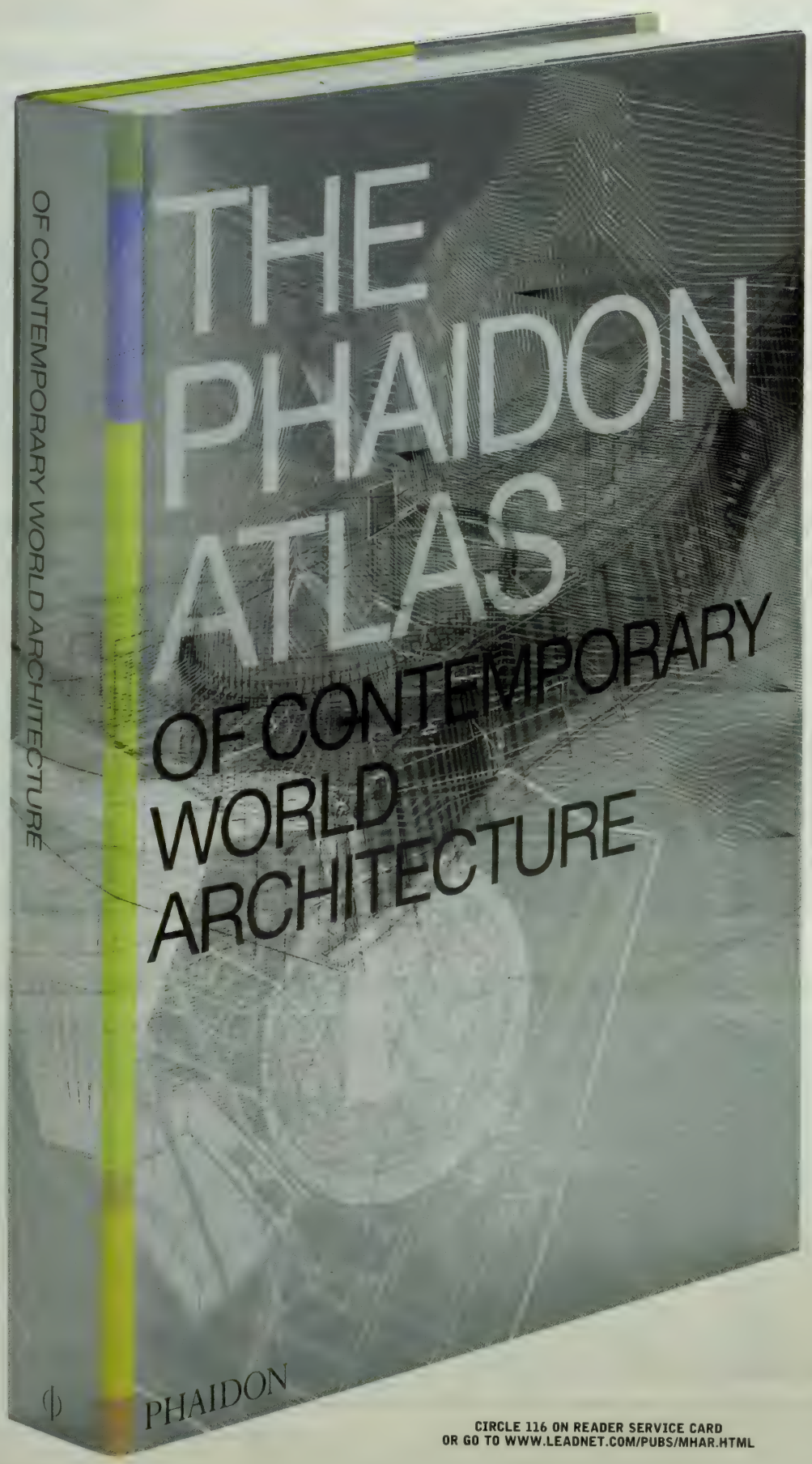
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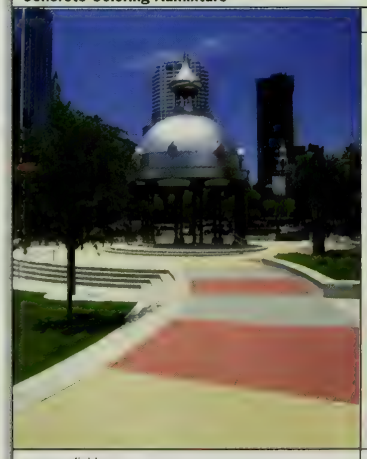
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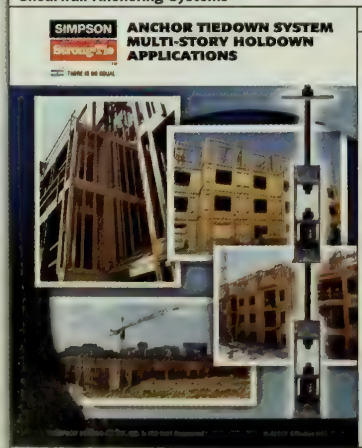
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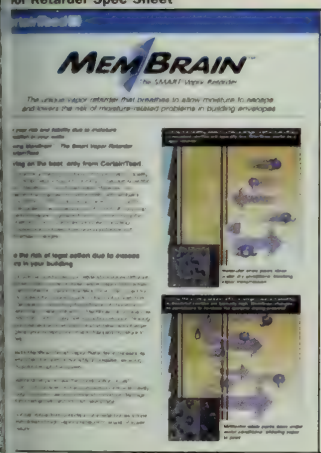
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Roofing Underlayment



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Polyglass offers Polystick TU Plus™, a high quality, skid resistant tile roofing underlayment that is formulated to withstand heat up to 260°F. TU Plus is manufactured using patented ADESO™ technology, a "true" APP compound, glass fiber reinforced, with a high strength polyester fabric on the upper surface and aggressive self-adhesive compound on the bottom.

olyglass.com | 170

IGT Glass

Anti-Reflective Glass | 480-767-8220

glaströsch



8 Doors & windows

LUXAR reduces glare and reflection by 99.5%, making every application where it is used so clear that the glass is almost invisible. When high visibility is desired Luxar is the product of choice. It is an ideal product for storefronts, such as Toys R US, pictured, museums, stadiums, view homes and restaurants, display cases, and projection rooms. Contact IGT Glass for more information.

www.luxar.ch | 173

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Jerome R. Durr Studio

Custom Glass Art | **800-552-9836**



8 Doors & windows

Jerome R. Durr Studio, providing residential, liturgical, commercial, and public art since 1973.

www.jeromedurr.com | 174

Technical Glass Products

Fire-Rated Steel Framing



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Technical Glass Products offe Fireframes™ Curtainwall Se fire-rated steel framing for expanses of glass spanning m stories. Available for interior or e use, the Curtainwall Series carr ratings up to two hours. Custom face caps allow a wide vari appearances, including stainless For more information visit the com Web site.

www.fireglass.com

Nathan Allan Glass Studios, Inc.

Textured Glass Panels | **604-277-8533**



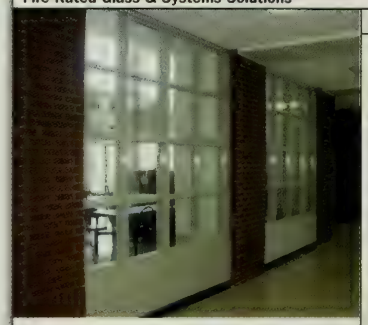
8 Doors & windows

Crystal Glass Series is a new addition to Nathan Allan's exclusive Josiah J Collection. Crystal Glass Series incorporates a special glass frit that is fused to the back of the glass to add a stunning and unique textured feel to the glass. Originally developed for Four Seasons Hotel in Whistler, BC to provide unique glass light covers, with the ability to hide the hot spots of the lighting sources, Crystal Panels are now being used in illuminated feature walls, with added colors such as Cognac or Cobalt Blue. Available in clear or colored glass. Catalogue available. Email bm@nathanallan.com.

www.nathanallan.com | 175

VETROTECH SAINT-GOBAIN

Fire Rated Glass & Systems Solutions | **888-80**



VETROTECH FIRE RESISTANCE Saint-Gobain Glass Solutions

8 Doors & windows

VETROTECH Saint-Gobain ha one of the industry's broadest ra clear, fire, and safety rated products since 1983. The co range of products offered in America is now domestically pro thereby assuring an unsurpasse of service and responsiveness customer. The VDS Framing features a narrow profile steel designed for 1- and 2-hour rated door, wall, and window section SGGSwissflam Structure feature minute rated "flush-joint" glaze system, which results in a ma clear vision area with a minimal The 20-minute ALL-GLASS D the world's first All-glass Fire rate

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Special-Lite, Inc.

FRP Doors | **800-821-6531**



8 Doors & windows

The SL-17 FRP (Fiberglass Reinforced Polyester) Flush Doors offer trouble-free performance and long-lasting beauty in the most demanding interior and exterior entrance applications. They're the logical choice where heavy traffic, adverse environmental conditions, and physical abuse or vandalism are expected, due to the extreme scratch, dent, stain and corrosion resistance provided by Class 1 aluminum anodizing, through-colored face sheets, and Special-Lite's unique approach to door design and construction. These light weight and durable doors also help prolong the life of hardware and framing to deliver the lowest total cost of ownership for the entrance system.

www.special-lite.com | 176

Wausau Window and Wall

High-Performance Curtainwall System | **877-67**



8 Doors & windows

Wausau Window and Wall Sys high-performance SuperWall with integrated sunshades h unify Flad & Associates' award- design of ACT, Inc.'s new lo campus—home of the nationally nized college placement asse tests. Wausau worked closely architects, general contractor M Lacina, and glazing contractor Enterprises, Ltd. to provide a wall system with a 2.5-in. fa depths up to 13-in. Canted and certain sections required full curtainwall sloping five d Sunshades were integrated wit total glazing system including measuring up to 45-in. deep reduce solar heat gain and HVA

www.wausauwindow.com

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ustom Color Capability | 877-276-7876



9 Finishes

Faux Coat, a new custom paint finishing technique developed by Armstrong, produces a rich, hand-crafted effect that appears almost antiqued in nature. Designed for use on Armstrong TinCraft™ and Ledges™ ceilings, the effect is ideal for use in specialty stores, hotels, restaurants, clubs, and other environments that have a need for custom colors. Visuals in the TinCraft line all feature embossed metal looks that were popular in the early 20th century, while Ledges features a look that is reminiscent of Old World raised panel woodwork.

armstrong.com/ceilings | 180

Nova Distinctive Floors

Cork Floating Floors



9 Finishes

Nova Cork floating floors artistically embrace design, function, and environmental consciousness. Manufactured in 1-ft. by 3-ft. "klick" (glueless) system planks that don't adhere to the subfloor, Nova Cork's 2004 line boasts 28 designer patterns including Quadro (shown), that are sure to bring beauty and comfort to your home. Harvested from forests that meet stringent environmental, social, and economic standards, Nova Cork, Linoleum, and Underlayment products have received the "GreenSpec" distinction from Building Green, Inc. and offer a 20-year residential and a 10-year commercial warranty. Fax number 310-830-9589.

www.novafloorings.com | 183

M. Scofield Company

ncrete & Cementitious Flooring | 800-800-9900



9 Finishes

Stylish Scofield flooring systems: For beauty and durability, concrete and cementitious toppings provide stylish flooring for high traffic areas in offices, lobbies, public spaces, food service, and retail areas. Scofield Systems offer diverse choices—ranging from monochromatic toppings to translucent, antique stains for faux finishes and dramatic graphics. Email info@scofield.com.

scofield.com | 181

Teragren LLC

Bamboo Flooring, Panels & Veneer | 800-929-6333



9 Finishes

Teragren manufactures beautiful, durable, renewable interior bamboo solid strip and wide plank flooring, stair components, panels and veneer. Featured in the Hyatt Maui, Timberland stores, Seattle Central Public Library, and other commercial and residential installations nationwide. 25% harder than oak and 2-1/2 times more stable than maple. Available in two grains and colors. Contributes to LEED™ as a rapidly renewable resource and low-emitting material. Coating materials water-based, solvent-free. 25-year residential and 5-year commercial finish warranties. Visit the company's Web site for more information. Contact Teragren for samples and/or brochure.

www.teragren.com | 184

vamar Company, LLC

orative Finishes | 800-638-4380



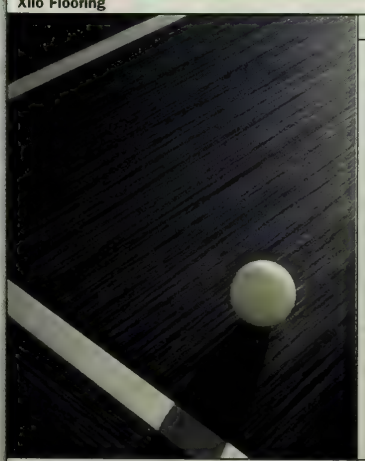
9 Finishes

Mysterious, sexy, and illuminating, new Nevamar Manhattan laminate actually appears to emit light from within. With their exclusive Armored Protection™ Surface, it meets all NEMA performance standards, so it's suitable for horizontal and vertical applications. Available in three natural metallic hues, Manhattan is among the 18 new additions to the broad Nevamar line.

evamar.com | 182

Viva Ceramica

Xilo Flooring



9 Finishes

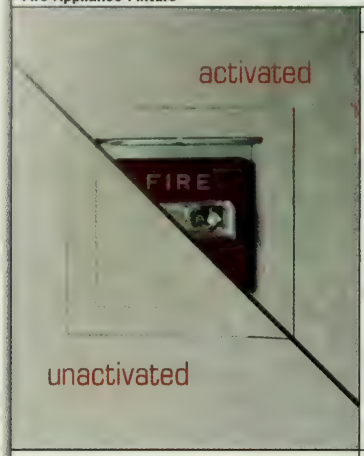
Colors meet the purest clays forged and precompacted in a higher than normal thickness (12mm). Complete penetration between body and color grants lasting optical results, maximum ultimate tensile strength, absolute resistance to acids, scratches, frost, and dirt. Totally environmentally friendly manufacturing process, assured by ISO9001 quality system. Certified plant of E milceramica in Fiorano Modenese; series XILO is guaranteed 20 years for private homes and 10 years for public areas. For further information please consult Viva for updated price list and sales conditions.

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Concealite Life Safety Products

Fire Appliance Fixture | 507-825-2907



10 Specialties

Make those necessary design evils, such as fire appliance fixtures, disappear. Conceal-Alarm fixtures allow your design to take center stage. While an alarm appliance is deactivated, it hides behind a door decorated to blend in with your wall. Upon activation, Conceal-Alarm rotates 180°, revealing the strobe and/or horn appliance for patrons to see and hear. Once the emergency has passed and the system is deactivated, the Conceal-Alarm will return to the closed position, once again revealing your design. For more information or specification sheets on Conceal-Alarm, visit their Web site or call.

www.concealite.com | 186

Design 21

Magazine Holders | 954-471[illegible]



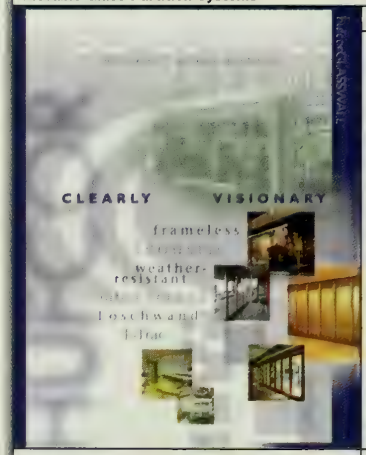
11 Equipment

Magazine holders are now pro[illegible] with heavy gage anodized alumin[illegible] combination with multilayer pl[illegible] from Finland. There are two sizes [illegible] able. Also produced: Sistema [illegible] modular bookcases, CD-DVD [illegible] units in aluminum with stainless [illegible] feet. Systems are floor to ceiling, [illegible] floor to wall; 7-, 6-, and 5-ft. [illegible] check the Web site. Fax numbe[illegible] 972-6100.

www.designtwentyone.com | 18[illegible]

Hufcor, Inc.

Movable Glass Partition Systems | 800-542-2371



10 Specialties

Hufcor introduces a complete new line of movable glass partition systems featured in a new brochure. The line features frameless storefront style panels with patent-pending batwing pass-doors, acoustic and weather resistant glasswalls without floor tracks, wood-clad products, and electrically controlled E-Trac tracking system and Loschwand overhead systems. Call or visit the Web site.

www.hufcor.com | 187

Gyford Productions

Display Case & Shelving Equipment | 775-82[illegible]



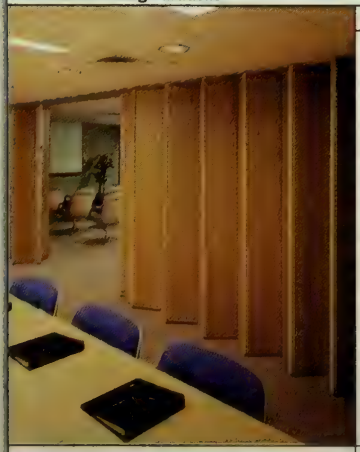
11 Equipment

The 3/4-in. gripper can attach [illegible] surface, or be suspended by cab[illegible] tems and is interchangeable w[illegible] StandOff Systems™ product li[illegible] comes in various sizes, holdin[illegible] strates from 1/4-in. to 3/4-in. [illegible] Productions, creator of the c[illegible] StandOff Systems, stocks ov[illegible] components. Most items ship [illegible] day. Complete design and te[illegible] support available. Made in USA. [illegible] a free catalog.

www.standoffsystems.com

Panelfold, Inc.

Acoustical Folding Partitions



10 Specialties

Sonicwal® acoustical wood folding partitions are Panelfold's best kept secret. Acoustical ratings to STC 50 and NRC .70, manually or electrically operated. Sonicwal folding partitions may be specified in a wide variety of surfacing materials, including wood veneer, colorful vinyl laminates, high-pressure decorative laminates, wall carpet, polyolefin textile wall covering, and COM. Complete information on Panelfold's broad lines of folding doors, acoustical folding partitions, operable walls, relocatable walls, and NRC .75 Acoustical Panels is available in its Architectural Products Catalog and from Sweets CD. Panelfold also has available an Electronic Library on CD-ROM containing product information, downloadable three-part specifications, and CAD drawings.

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New Holland Church Furniture

Curved Church Pews | 800-22[illegible]



12 Furnishings

Curved pews are "Round [illegible] Reason"™ and are designed and [illegible] ufactured by New Holland [illegible] Furniture. Curved pews are de[illegible] for maximum seating, curved f[illegible] cient use of space, design [illegible] enhance worship, created for co[illegible] nity, uniting the family of God[illegible] Holland Church Furniture is a c[illegible] member of the Architectural Woo[illegible] Institute (AWI), so you can be a[illegible] of the very highest quality. [illegible] nhcw@newhollandwood.com.

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tal Furniture | 360-441-2652

12 Furnishings



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4pmd.com | 192

Finlandia Sauna Products, Inc.

Precut Saunas | 800-354-3342

13 Special construction



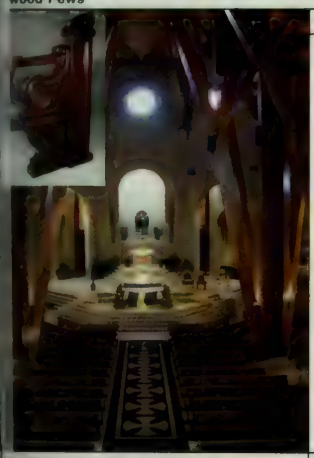
Finlandia Sauna has manufactured exclusive and authentic saunas since 1964. Finlandia offers precut sauna packages and modular sauna rooms as affordable luxuries that can be included in any remodel or new construction. The company markets four all-clear western softwoods and is the only manufacturer to use 1-in. by 4-in. paneling, instead of the cheaper 1/2-in. by 4-in. material used by others. Finlandia's packages include all room parts, a choice of a Finnish-made electric heater, a prehung door with choice of glass, and all necessary accessories. Finlandia's exciting new heater, the EverReady, is an excellent option for the person always on the go. Fax number 503-684-1120. Email info@finlandiasauna.com.

www.finlandiasauna.com | 195

Marshall Company

wood Pews | 208-642-3344

12 Furnishings



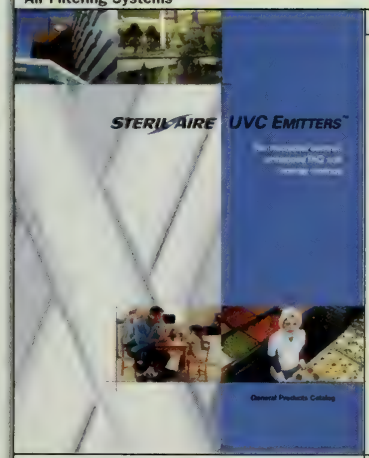
For over 75 years, The Marshall Company has offered distinctive church furnishings throughout the U.S. and Canada. A longtime leader in the church furniture business, Marshall prides itself on being one of the few companies in the U.S. to still manufacture only quality solid hardwood pews. That means no veneers, no chipboard cores, no plastic laminates, just the classic beauty and durability of solid Northern red oak. But materials aren't everything; Marshall's highly skilled craftsmen are dedicated to designing furniture that is beautiful and functional, as well as being affordable. Fax number 208-642-9537. Email pews@marshallpews.com.

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Steril-Aire

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15 Mechanical



General products catalog showcases Steril-Aire UVC Emitters™ for mold and microbial control in HVAC systems. The devices enhance IAQ and infection control, reduce absenteeism, save 15% to 20% on energy costs, and slash A/C coil cleaning costs. Steril-Aire is a pioneer in "UVC for HVAC™" because its multi-patented devices offer greatly increased output in cold and/or moving air environments, providing superior germicidal performance and longer service life. Products include UVC devices for commercial, residential, health care, school, food processing, and industrial applications. Email sales@steril-aire.com.

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Tec Structures

e Fabric Structures

13 Special construction



FabriTec Structures introduces a new generation of tensile fabric technology. Its highly specialized fabric structures utilize the most advanced architectural materials available and are non-combustible, both thermal- and UV-resistant, and can offer full weather protection. With virtually unlimited design options and applications, FabriTec's products are both practical and often visually spectacular. Designers can choose fabrics from a wide range of color and translucency and enjoy a cost effective and "fast-track" alternative to conventional building systems. FabriTec Structures provides clients with complete design/build services, including concept development, engineering, fabrication, project management, and installation.

194

Alera Lighting

Architectural Fluorescent Lighting | 509-921-8300

16 Electrical



Architectural Lighting has reached its pinnacle with the curVista direct/indirect luminaire by Alera Lighting. This 9-1/2-in. wide by 2-1/2-in. deep elegantly curved housing features solid or perforated baffles on each side for direct light, while the indirect components cast light upward and around for a soft, balanced glow. Available with one, two, or three T8, T5, or T5HO lamps in 4-ft. and 8-ft. lengths with modular mounting points. Unique, patent pending inner die cast aluminum joiners provide consistently straight rows. Applications include offices, retail, schools, health care (overlay available), reception areas, and anywhere distinct, attractive lighting is desired.

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Cooper Lighting

Lighting Fixtures | 770-486-4800



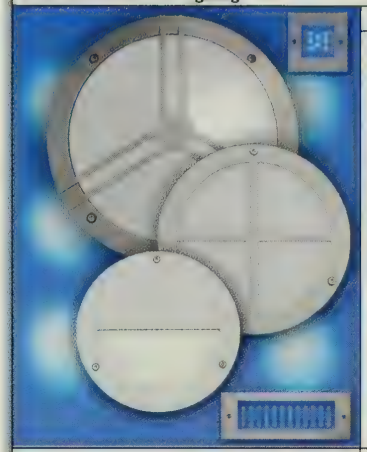
16 Electrical

Part of the new meticulously detailed INVUE™ collection from Cooper Lighting, ICON offers solutions for full cutoff compliance (Dark Sky Compliant), spill light control, and path of egress illumination, while merging the latest in high efficiency lamp technologies. ICON's gentle curves and sleek profile are offered in two unique arm choices combined with structural element options, multiple housing sizes and lamp options, and precision built segmented optical systems. Designed to sustain a lifetime of tough environmental conditions, ICON's precisely engineered die-cast aluminum housing utilitizes an IP65 rated gasketing strategy combined with a seamless 5 stage polyester powdercoat finish to seal out contaminants.

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Lumux Lighting Inc.

Efficient Architectural Lighting



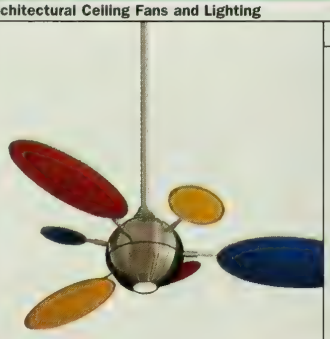
16 Electrical

Lumux Lighting Inc., an architectural lighting company, distinguishes itself by manufacturing innovative, energy efficient, aesthetically and cost effective lighting fixtures serving the residential, commercial, and industrial markets. Lumux's creativity, quality, and innovative, delivering commitment to service are the characteristics that make it a leading architectural lighting source for architects, lighting designers, and specifiers. Lumux has the largest selection of stainless steel and LED driven fixtures in stock for any design and build specific applications. Full catalog online.

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16 Electrical

Enjoy art... the Cirque ceiling fan, a high performance dynamic sculpture, Good Design Award winner. View silver and mahogany blade versions on their Web site. Includes 50 W dimmable light and touch control system, remote control available. Whisper quiet, powerful, and beautifully made, this timeless design can be used on 8-ft. ceilings or on cathedral ceilings with optional downrods up to 6-ft. long. Suitable for sloped ceilings. Lifetime warranty. To buy high-design architectural fans and lighting, please visit G Squared's Web site or call between 6 AM and 6 PM PST.

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Prima Lighting Corp.

Light Fixtures | 866-885-15



16 Electrical

The Multilight fixture series gives complete freedom and control over light source with high-end, elegant intriguing style. Easily direct the exactly where you want and tailor power to your needs. Choose one six, four, three, or two light configurations available as a wall (shown), pendant, floor, or table light. Chrome and silver finishes. Clean, architectural tipoint canopies are available for pendants. Please visit Prima Lighting Web site or call to find out more about its breakthrough OPUS line of contemporary architectural lighting.

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Hydrel

Pole Mounted Lighting



16 Electrical

Hydrel's distinctive new G2™ design signature, introduced earlier this year in the highly refined G2 Building Mounted series, has been expanded with the launch of G2XTEND pedestrian-scale pole mounted lighting. The pedestrian-scale dome or wedge shaped luminaires with matching poles complement a variety of building styles and site design schemes. And G2XTEND may be specified with any of four full cutoff optical systems—all rotatable in 90°F increments to illuminate pathways, plazas, campuses, building entrances, parking areas, and avenues.

288

Sternberg Vintage Lighting

Architectural Style Luminaires



16 Electrical

Sternberg Lighting introduces the VILLA Luminaire. This fixture architectural splendor with its roof and sweeping round, open NIGHTSKY™ OPTI-SHIELD optic system will provide sharp or type V cut-off on any street, way, or parking area. A type II refractor can also be used. Three sizes 1730, 1720, and 1710 provide flexibility to fit the scale design. For that modern contemporary look, specify the VILLA Luminaire installation shown (inset) is at Maryland State College in Baltimore, MD. Request a catalog for more information. See the Sternberg Web site.

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INTERN ARCHITECT

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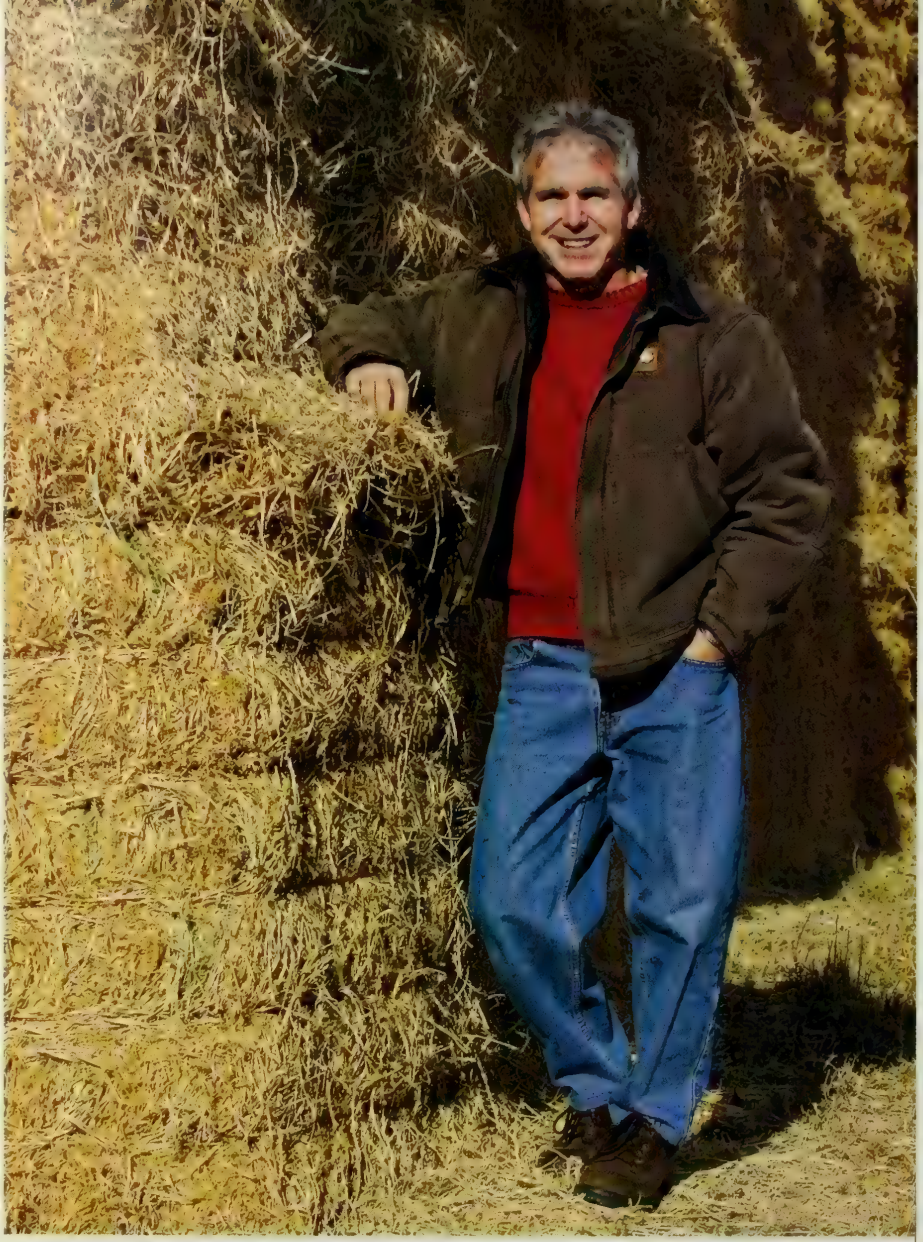
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Robert Young helps rebuild tribal lands, one house at a time

Interviewed by Deborah Snoonian, P.E.

"Give a man a fish and you have fed him for today; teach a man to fish and you have fed him for a lifetime." That's the philosophy behind the Red Feather Development Group, a nonprofit organization based in Bozeman, Montana, which works with Native Americans to enable them to build straw-bale houses on reservations. Robert Young, once a successful garment industry executive in Seattle, founded the operation in 1994 after reading a newspaper article about three Native elders who froze to death because of substandard housing. RECORD *spoke to Young as he and his staff prepared for a build last July on the Turtle Mountain Reservation in North Dakota.*

Q: *Why are you using straw-bale construction your projects?* Straw-bale structures are energ efficient and cost a fraction to heat compared to typi houses on tribal lands. We try to design the structures such a way that volunteers and nonskilled labor can ha dle much of the construction themselves. And the hom also make use of local resources. On the Navajo res vation in Arizona and New Mexico, tribal members form a company called the Navajo Agricultural Produ Industry. They're baling wheat grown on the reservati and selling it for a profit to local builders. We'll be us bales from this company in our construction project North Dakota next month.

You've built mostly houses, but the North Dakota proj is a little different. Can you share some details? We'll working with Turtle Mountain Community College to bu an environmental research center. It's about 1,6 square feet, the largest project we've done so far. T center's going to highlight straw-bale-construction te niques and other environmental concerns that face t community, like water conservation and reducing pe cide use in farming. The project will allow the hopefully, to teach straw-bale-construction methods the tribal college. The community has lost about a thir their homes due to black-mold infestation, and th already had significant housing problems to begin wit all goes as planned, they'll be able to rebuild their hous stock using straw-bale techniques.

How do you choose which tribes to work with? Right n we're focused on assisting the Northern Cheyenne tri in the Plains states, as well as building a coalition am tribes in the southwestern U.S. Those are locations wh the climate makes it feasible to build straw-b homes—cold and dry or hot and dry. These areas a have the greatest need for new housing. At the P Ridge Reservation in South Dakota, for instance, wh we did our first project, 40 percent of the homes have running water, and many lack electricity. Through build these structures, we want to establish programs that can be managed tribal members themselves, so they can oversee the construction of hou or other buildings for their communities.

What do you find most rewarding about this work? If we can give tribal me bers a tool for turning housing into a self-sufficient enterprise, we're achiev a big part of our goal. Most of these people live in extreme poverty. If they energy-efficient homes, they'd have more money for food, clothing, educat By fulfilling one need—adequate housing—the ripple effect is enormous.

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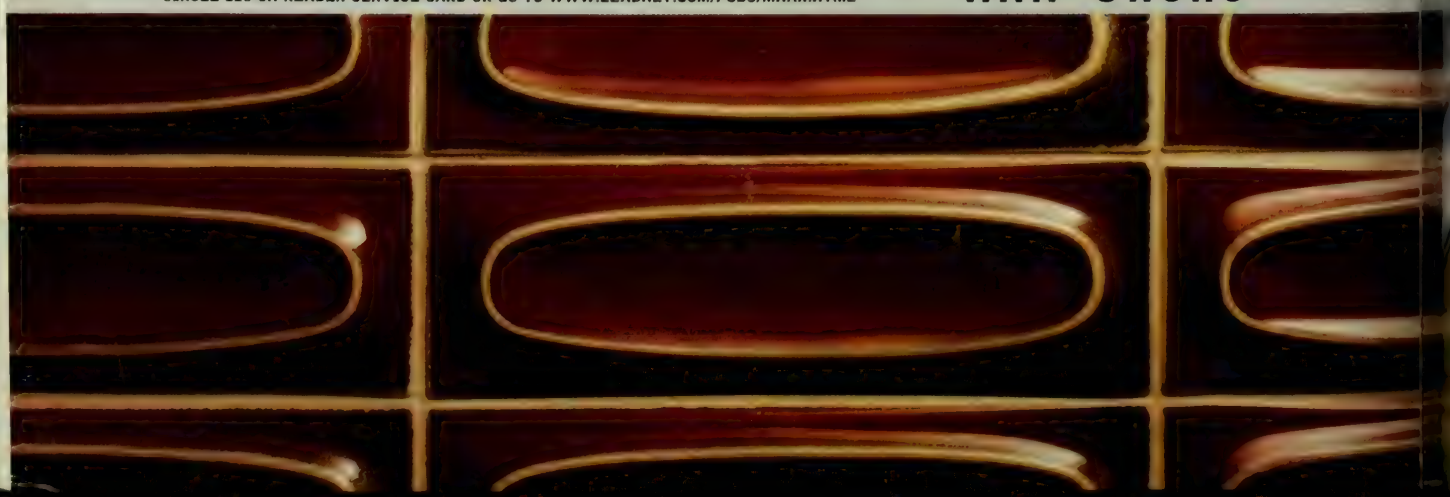
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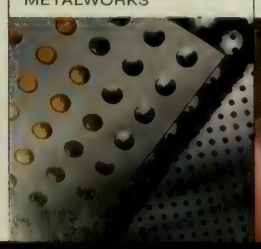
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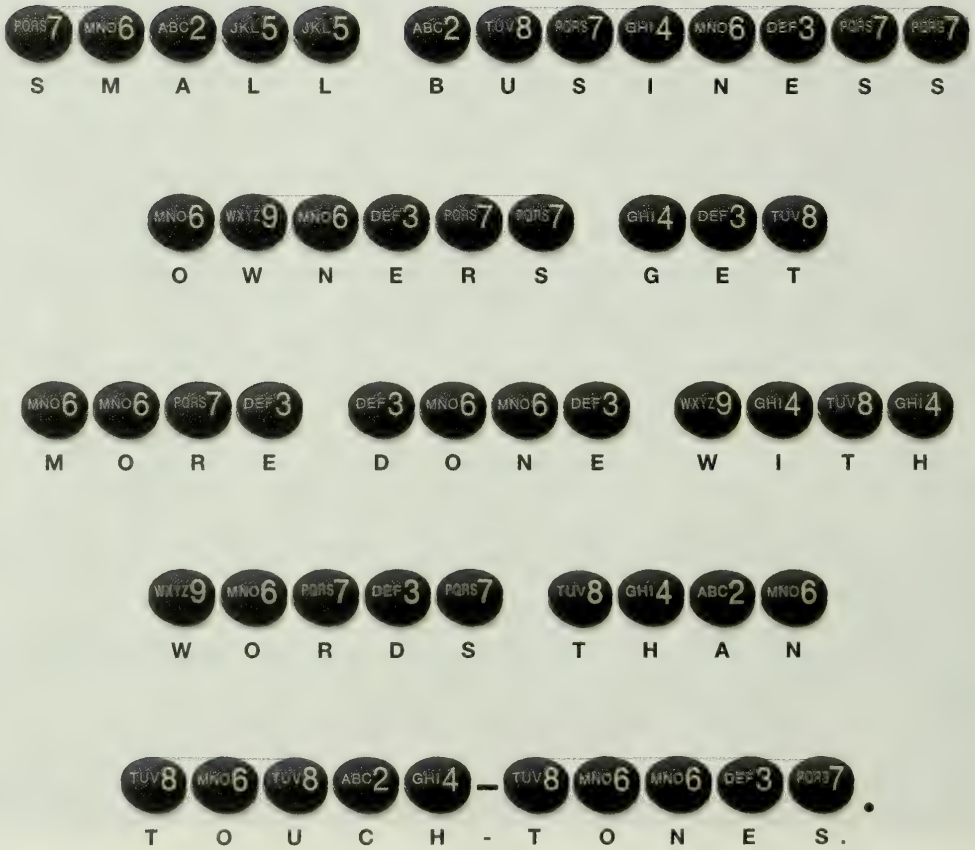
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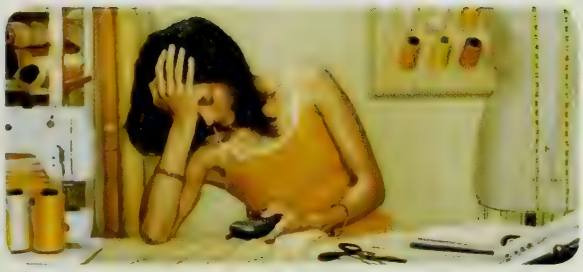
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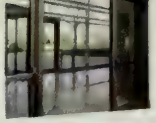
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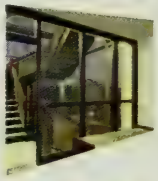
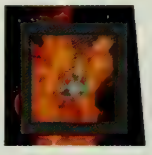
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ARCHITECTURAL RECORD

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On the Cover: *Danish Jewish Museum, by Studio Daniel Libeskind. Photograph by Bitter Bredt*

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* You can find these stories at **www.architecturalrecord.com**, including expanded coverage of Projects, Building Types Studies, and Web-only special features.

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Venice Biennale

While you may not have had the opportunity to get to Venice to check out this year's show, our Web site provides you with an insider's look at the U.S. Pavilion and the talented young architects that made the show a success. We'll also supply opening-party pictures and audio commentary from the participating architects.

Residential

In this quarterly section, we take a trip outside the city limits and explore houses off the beaten path. Discover a residence in the highlands of Texas, a beach house in England, and a villa on a remote island in Finland. And, as always, we feature the House of the Month exclusive to our site.

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Bottom: Vista House, Dungeness, Kent, England Photography: © Chris Gascoigne



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Building Types Study

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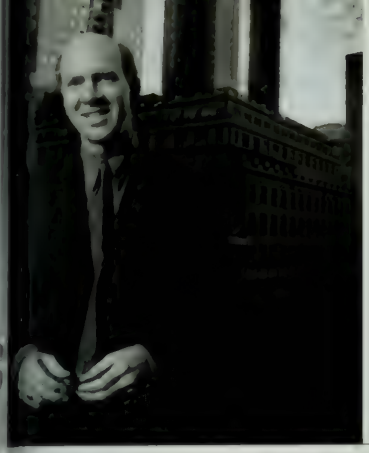
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A Man Called Fay

Editorial

By Robert Ivy, FAIA

In an architectural world freaked out on speed and hype, Fay Jones stood apart. His residences, chapels, and pavilions form a discernible body of work as singular and distinctive as their maker. In a sense, Jones ennobled and quickened Arkansas, an emerging region near America's core, and the place shifted from near-frontier to the kingdom of Thorncrown, a wonderland of natural gifts and shifting light. We saw this focused world anew through his eyes.

The press has eulogized his personal qualities, including his forthright, democratic manner, his dignity, his energetic awareness, his role as an inspiring teacher, and his professional alliances with great minds, including Frank Lloyd Wright and Bruce Goff. (Who else worked with and learned from both?) Jones's greatest lesson for subsequent generations, however, lies outside the so-called "Ozark style," characterized by wood and stone; instead, his real legacy lies within his work and its relationship to language. Fay Jones thought and spoke most eloquently in three dimensions, a lesson at the core of architectural meaning. Few have mastered it more completely.

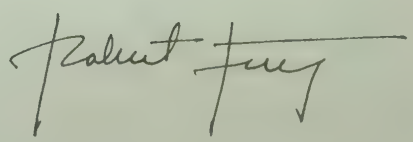
In fact, he bristled at the world "style." "I never sought to ring the universal bell," he said, eschewing trendy developments. He felt that the word style conveyed too much of superficial, temporal fashion, when his goal was the development of a body of thought, conveyed through drawings, models, and completed buildings. He never acknowledged this notion of architectural language as articulation, if he ever consciously held it. However, the work proclaims it as physical proof. He dreamed and made a world using a consistent architectural syntax, spending a lifetime pursuing its realization.

With some exceptions for the chameleonlike Wright, who lived to explore a variety of media, consistency of means has characterized other great careers. Consider how the late Mies van der Rohe (steel) or today's Tadao Ando (concrete) deploy a limited range of architectural materials complementary to their individual visions. In the predigital age, that is.

In Jones's case, he accepted the Wrightian, even Emersonian, notion of the relatedness of language at all scales. Thus, famously, "the whole is to the part as the part is to the whole." The truth (for there was a sort of truth) of the architecture lay in its relationship to the natural world, to its immediate surroundings and topography, to the materials and systems that it comprises, and to the details that constitute its fundamental spirit. Details, in this cosmology, take on tremendous weight, for in them we can see, as Blake proposes, "a World in a grain of sand." The senses drink it all in.

With typical economy of expression, Jones would have scoffed at the term "theory." Yet he explored ideas. While consciously drawing meaning from history, Jones was working out a personal worldview that drew on wellsprings within his own psyche, in which rational and intuitive elements are conjoined. Characteristically, he called such motives "caves and tree houses." Thus, wet stone walls, curving and womblike, form the bases of early works, which simultaneously rise high into the tree line, admitting light and air.

At its highest expression, at Thorncrown Chapel or Pinecote Pavilion, his work coalesces into an architecture that fully expresses complex thought, blinding our attention to the pieces and parts. At the critical moment in both instances, the literal linchpin has been replaced with a steel void, an oculus he called the "operative opposite." Light pours through this structural ring, forming a perspective that snaps these highly engineered constructions into focus, at once blurring our understanding and dazzling our sight. Do we see building or art, a real place or another realm? Using the simplest things, whether humble materials, pattern, or light, Jones synthesized the components into a coherent, expressive architectural idiom. In his lifetime, Fay Jones did what other architects have tried to do, but they could only jabber: He spoke most effectively without uttering a single word.





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Letters

Ode to Fay

At the beginning of the 1980s, I was an architecture student fortunate enough to start my professional career in Fay Jones's five-person office [News, "Architect Fay Jones Dies," archrecord.com]. Fay's strongest belief was that great architecture was usually a result of a firm set of architectural principles. To that he would add: "Don't be timid." Simple comments, but profound to the ears of a young architect struggling to understand the Postmodernism of the day.

Fay Jones, and Samuel Mockbee as well, are viewed partially through the veil of being southern, rural, soft-spoken, and likable. Let's also honor the underlying struggles it took, personally and professionally, for their bodies of work to become a valuable part of the American landscape.

Gregory Uekman, AIA
Uekman/Architects
Bethesda, Md.

College education

Nancy Levinson's article "Campus Planning Is Breaking New Ground" [August 2004, page 86] was well constructed, with input from many informed sources around the country. However, several of the featured projects that followed the story blatantly disregard this latest thinking in college campus development.

How, for instance, does Frank Gehry's Stata Center at MIT, which looks as if it has already been severely damaged by an earthquake, show "a vision that integrates the physical campus with the identity of the institution"? Certainly, Will Alsop's Sharp Centre in Toronto (a ridiculous "pencil box" supported by a dozen of its contents) is evidence of Vassar president Frances Daly Fergusson's assertion in Levinson's article that "even the most beautifully situated campus can be ruined by poorly located buildings and bad open space." And how on earth does Jensen & Macy's CCA Graduate Center in San Francisco, a common warehouse that was turned into a bland warehouse, display an "interplay between memorable architecture and distinctive landscape that makes a good campus"?

Of all the campus buildings being constructed "at a prodigious pace and impressive scale," you have selected examples for their shock value rather than for the manner in which they respect the serious planning and thought explicit in Levinson's piece. What an opportunity missed!

David A. Lunde
Retired Director of Campus Planning, University of Georgia
Athens, Ga.

Architects at arms

American embassies [Commentary, July 2004, page 67] have been forced to move from architects' preferred emphasis on openness to the overpowering priority of security because of failed American foreign policy. The government's current attempt to dominate global politics and the world economy fuels anger and

ve your light new direction.

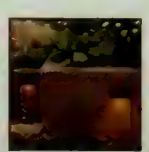


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resentment against us, as does its transparent double standard on human rights used to evaluate allies versus opponents in the so-called "War on Terror."

As the new Standard Embassy Design will do little to reverse these trends, and as architects seem to be increasingly shut out of advising the government, perhaps architects should find ways to be more active in advocating for a new foreign policy that will allow us to practice the best in embassy design again.
Raphael Sperry
San Francisco

Girl from Curitiba

As a Brazilian architect living and working in North America since 2000, I'm always looking for Brazilian or South American news in your magazine. When I picked up the July issue, I was excited to see news about one of my heroes: Oscar Niemeyer. Even better, my hometown—Curitiba—was mentioned [News, page 38]. I hope you keep writing all the great articles you do, and thanks for more Brazilian architecture on your Web site in August.
Leticia Amaral
Via e-mail

Represent, don't invent

In the week after the new Seattle Central Library opened on May 23, I spent hours in the building, exploring every floor and making use of every function. That said, I hope some day to visit the building photographed by Timothy Hursley in the July issue [page 88]. No one who has used the library can fail to see that Hursley's photographs reveal an ignorance of how the building actually works.

OMA/LMN's building is certainly among the most eloquent of libraries, one that's more than able to speak for itself. Hursley fails to recognize this, however, and presumes to supplant the building's narrative with his own, inventing when he should strive to represent. With a few noteworthy exceptions, his images do the building a considerable disservice, creating angles where there are none, engineering views that do not exist, and reimagining spaces that need not be reimagined.

Every good photographer necessarily leaves a particular imprint on his or her work, but Hursley goes to extremes. It seems sometimes as though he has designed a building of his own and then set out to photograph it. While Hursley's photographs are often dizzying and occasionally beautiful, they rarely reflect the building Seattle is coming to know and love.
Jacob Brogan
Seattle, Wash.

Corrections

The August news item [page 23] on the new Hollywood Bowl by Hodgetts + Fung Design and Architecture (with executive architect Gruen Associates) suggests that the structure was renovated and altered; in fact, it is completely new, built from the ground up. A July News item [page 38] misspelled the name of the Brazilian town where the Oscar Niemeyer Museum is located—it is spelled Curitiba. The curtain-wall contractor was incorrectly listed in a July story on Baltimore's Brown Center [page 127]. The contractor is Harmon. A September News Brief [page 42] incorrectly identified Suzanne Stephens's role in the book *Imagining Ground Zero*. She is the lead author. The same item misidentified the publisher of Paul Goldberger's book *Up From Zero: Politics, Architecture, and the Rebuilding of New York*. It is Random House.

Write to rivy@mcgraw-hill.com.



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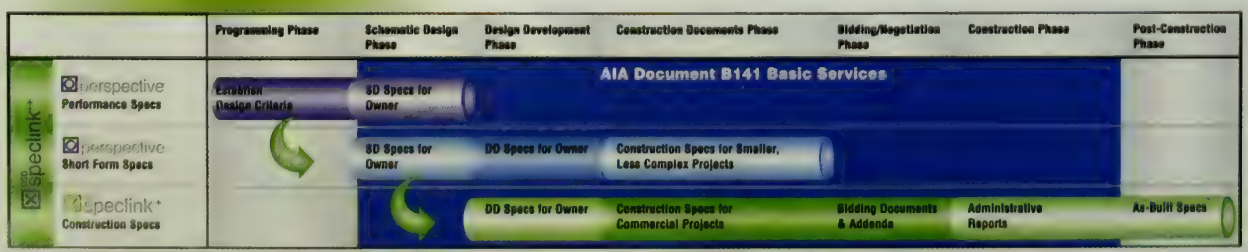
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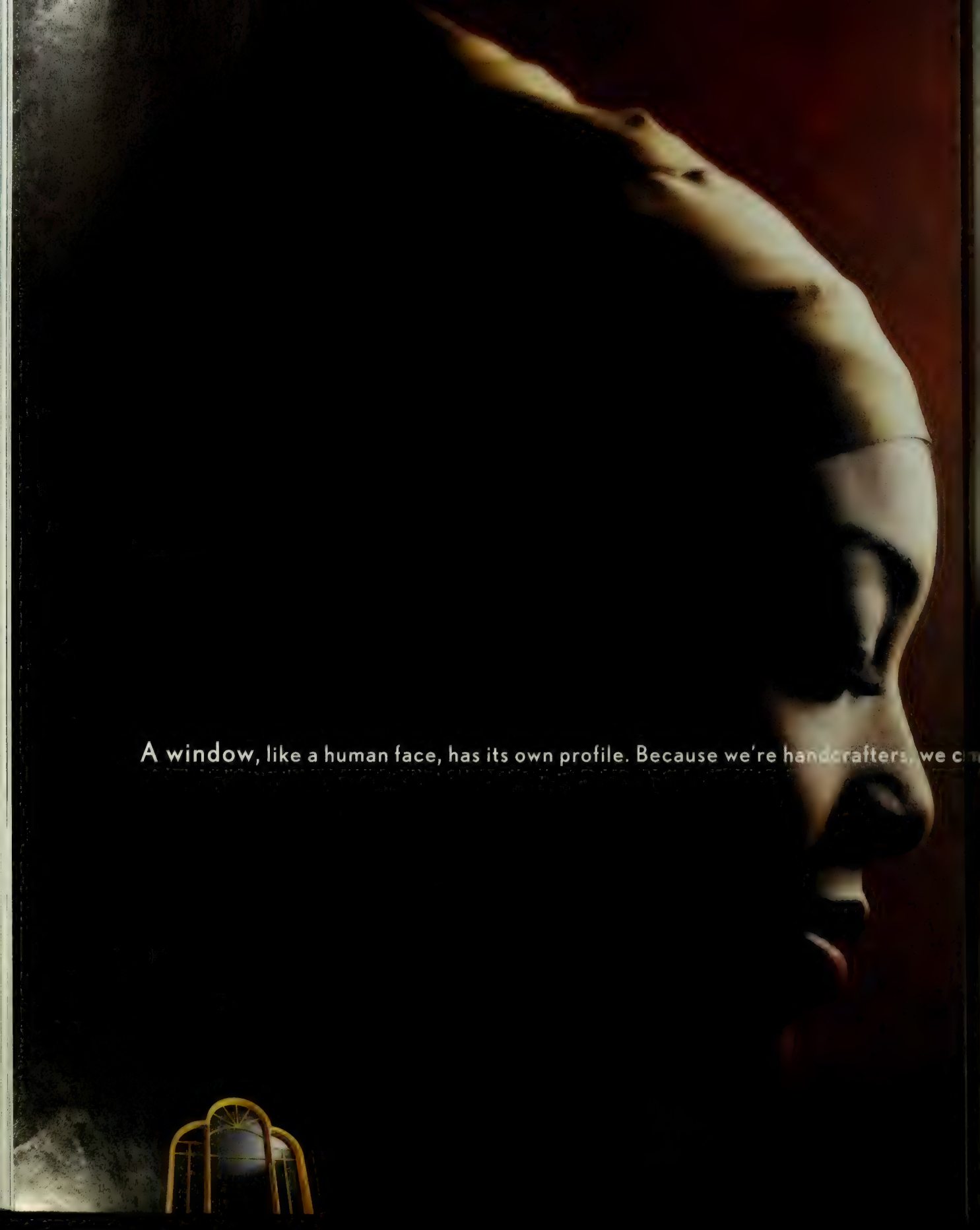


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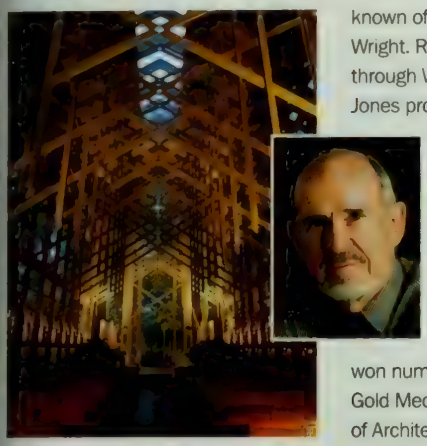
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Record News

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Fay Jones Dies; architecture says goodbye to several notables



Thorncrown Chapel by Jones (right).

E. Fay Jones, FAIA, whose houses and chapels won architecture's highest honors and international acclaim, died August 30 at his home in Fayetteville, Arkansas. He was 83.

Jones was perhaps the best known of the students of Frank Lloyd Wright. Relying on precepts traced through Wright to Louis Sullivan, Jones produced a large body of work tied to the concept of organic architecture. His designs, which typically use cedar, stone, glass, and creative lighting, can be seen from the Atlantic to the Pacific. Most are in the Arkansas Ozarks. He won numerous awards, including the Gold Medal of the American Institute of Architects in 1990.

His most famous building is Thorncrown Chapel in the small Ozarks town of Eureka Springs, Arkansas, which is nestled in the woods and supported by an intricate, rhythmical overhead cross-lattice system. In 2000, the AIA voted the chapel the fourth-best building of the 20th century. In 1991, the AIA ranked Jones among the 10 most influential architects of the time.

His career spanned more than half a century, beginning in 1953 with summers at Wright's Taliesin teaching compounds in Wisconsin and Arizona. A comment by Les Krantz in his book *American Architects* is typical of the praise Jones inspired: "His work expresses the natural process of 'organic unfolding, or blossoming,' as he puts it, and encourages us to explore and meditate upon man's relationship with nature."

Jones designed 135 residences and 15 chapels and churches in 20 states. Other projects included fountains, gardens, pavilions, and commercial buildings.

Euine Fay Jones was born January 31, 1921, at Pine Bluff, Arkansas, and he grew up in El Dorado, Arkansas. He studied engineering at the University of Arkansas, then earned a degree in the university's architecture program in 1950. He received a master's degree in 1951 at Rice University in Houston.

Jones taught architecture at the University of Oklahoma from 1951 to 1953. He then taught for 35 years at the University of Arkansas, and became its architecture school's first dean.

Jones had little of the flamboyance of his mentor, Wright, practically refusing to utter the first-person pronoun when discussing his designs. But his views could be expressed firmly. He once told an interviewer, "When someone off the street with no architectural background walks into a structure and is captured by a sense of awe, that's architecture with a capital *A*." *Roy Reed*

In Memoriam



Chicago Museum of Contemporary Art; Avery Fisher Hall; Columbus's St. Peter's Lutheran Church; Barnes's Haystack.

Josef Paul Kleihues, renowned German architect and educator, died on August 13. He was 71. He taught architecture and urban planning in Germany at the University of Dortmund and the Academy of Arts in Dusseldorf, and at New York's Cooper Union. Kleihues's theory of "poetic rationalism" sought to enliven the functionalist aesthetic of Modernism, and he helped champion Berlin's "critical reconstruction," filling in the gaps left by wartime destruction with buildings that followed scale but used new construction methods. A notable Berlin work was the elegant and historicist Hamburger Bahnhof rail station, now a museum. His first and only American commission was Chicago's Museum of Contemporary Art, which opened in 1996. *Tony Illia*

Max Abramowitz, FAIA, architect of many of New York City's most iconic midcentury Modernist buildings, died September 12 at the age of 96. A partner of Wallace K. Harrison, Abramowitz designed the Philharmonic Hall, later renamed Avery Fisher Hall, which opened in 1962 as part of Lincoln Center. With Harrison, he also designed the last Rockefeller Center skyscrapers, including the Time-Life and McGraw-Hill buildings. Harrison and Abramowitz oversaw the United Nations project in New York from 1945 to 1952. *John E. Czarnecki*

J. Irwin Miller, who helped transform Columbus, Indiana, into a modern design capitol, died on August 16. He was 95. Miller led the Cummins Engine Company to prominence, and in 1954 he started a foundation to subsidize architecture in Columbus. It has since paid $13.7 million in design fees for 42 projects, including an I.M. Pei library, a Kevin Roche post office, and a Cesar Pelli shopping center. Columbus now ranks with New York and Chicago as a U.S. center for design innovation. *T.I.*

Edward Larrabee Barnes, FAIA, the New York architect known for his clear, original designs, died on September 21. He was 89. His 1962 Haystack Mountain School of Crafts on Deer Island, Maine, a villagelike collection of simple shapes that broke from Modernism's increasingly sculptural forms, won the AIA's 25-Year Award in 1994. His firm won the 1980 AIA Firm Award and designed the I.B.M. headquarters in New York, Dallas Art Museum, and Walker Art Museum in Minneapolis. *S.L.*

OFF THE RECORD

The Institute of Classical Architecture [illegible] is opening a new national headquarters office at 20 West 44th Street in Manhattan.

[illegible] founder of the Graduate School of Fine Arts at the University of Pennsylvania, died on August 25.

The National Parks Service is accepting proposals for a Flight 93 Memorial to honor those who died in the plane crash in Shanksville, Pa., on 9/11.

New York–based Asymptote, founded by Hani Rashid and Lise Anne Couture, has received the fourth Austrian Frederick Kiesler Prize for Architecture and the Arts, a biannual award.

London's Victoria and Albert Museum (V&A) and the Royal Institute of British Architects (RIBA) have announced they are joining forces to open a new Architecture Gallery at the museum in November 2004.

Finalists for London's [illegible] include 30 St. Mary Axe by Foster and Partners, the Imperial War Museum North by Studio Daniel Libeskind, the Kunsthaus Graz by Peter Cook and Colin Fournier, the Phoenix Initiative by MacCormac Jamieson Prichard, the Spire of Dublin by Ian Ritchie and Associates, and the Business Academy of Bexley by Foster and Partners.

Architect Peter Eisenman, FAIA, received the Venice Biennale's Golden Lion for Lifetime Achievement Award at a ceremony that took place on September 10.

[illegible] an Edmonton, Canada–based engineering firm, is acquiring Dunlop Architects, one of the Canada's top design firms.

New York–based [illegible] is opening a new office in Newark, New Jersey.

Documenting recovery, one day at a time

Six months after the fall of the World Trade Center towers, a documentary filmmaker began filming time-lapse movies of the site from 35-millimeter cameras placed atop buildings around the area. There are now six of them, each shooting one frame every 5 minutes. When they have been filming for 10 years, the length of the project, the resulting images will be compiled into a 20-minute film.

The project is called Project Rebirth, and the documentary filmmaker behind it is Jim Whitaker, who is also the president of Imagine Entertainment, the film production company started by Brian Grazer and Ron Howard.

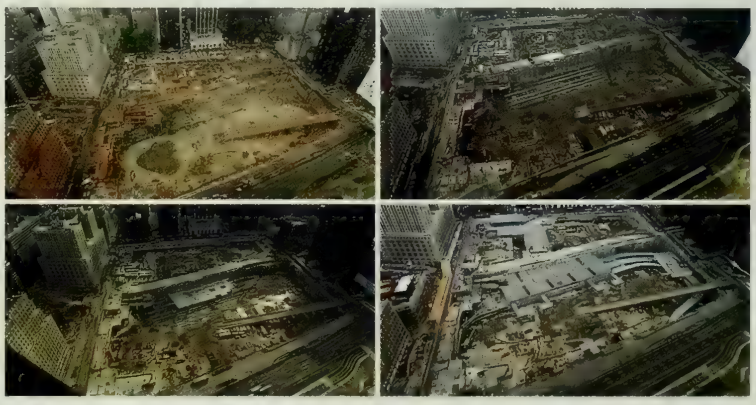
The six cameras are contained in specially designed boxes that protect them from the weather and from tampering. One sits at ground level, directed at the site across the cemetery at St. Paul's Chapel. Another camera is located in the American Express building, which was damaged when the towers fell. The floor where the camera sits was undergoing renovations when it was installed. Whitaker notes, "Tom Lappin, our director of photography, installed the camera when the floor was an open-air platform in the sky. When he returned to check the camera, he had trouble finding the closet amid all the finished office space."

In September, Project Rebirth launched its own Web site, www.projectrebirth.org, which is a project in its own right in several ways. In addition to information about the film, the site provides an interactive timeline, interviews with important figures in the rebuilding process, and information about the architecture, urban planning, and engineering that is going into the rebuilding.

The site also contains a history of the World Trade Center, but according to Joan Ockman, the site's architecture editor, history is not the real intent of the program. "The 'Rebuild' portion of the site is a behind-the-scene lens to the ongoing process, not the past," she says, referring to one of the site's four main sections.

For example, under the heading "Architecture," the site introduces the WTC team, and includes entries on SOM, Michael Arad, Santiago Calatrava, the master plan, 7 World Trade Center, the Freedom Tower, and other individual projects. The interview section began recently with a talk with Kevin Rampe, the president of the Lower Manhattan Development Corporation.

"I don't think the lay public or the architectural community has even been allowed into a building project this closely and on this scale," says Ockman. "I'm trained as an architect, but even for me, becoming this aware of every minute of the development has been quite a revelation."
Kevin Lerner



Project Rebirth uses time-lapse photography to capture the rebuilding of the World Trade Center. The site went from a hole (top left) to a construction zone (bottom right).

Massachusetts school: Design committee or competition?

The Boston suburb of Newton is wrestling with how to choose an architect for its new $100 million Newton North High School: either open the project to a design competition or stick with the city's existing system, under which the mayor chooses from a shortlist of firms culled by a designer-selection committee. A group led by local architect Anatol Zuckerman is pushing for a design competition open to all Massachusetts-registered architects, arguing that it would yield a more creative design and save money. Separately, the Newton Board of Aldermen is considering an ordinance to mandate a design competition for projects valued at more than $90 million. If the city opts against a competition, advocates will aim for a referendum in November, according to Zuckerman. The vast majority of public school architects in the U.S. are chosen through selection committees, according to Jim Dyck, chair of the AIA Committee on Architecture for Education. "I think there's an economic case to be made for competitions," he says. "Given the tiny percentage of first costs, what you spend to get the best person to do the job has a significant effect on the life of the building." Newton director of communications Jeremy Solomon says a design competition might not tap an architect familiar with the community or allow for adequate citizen input, but added that the mayor was "committed to keeping our lines of communication open." The school is expected to be complete by the end of 2008, says Solomon. *Ted Bowen*

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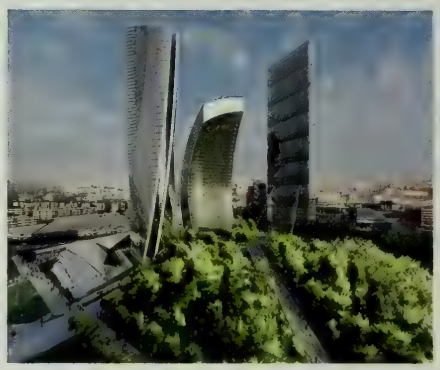
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Libeskind, Hadid, Isozaki designing towers in a growing Milan

At the beginning of August, the city of Milan announced the selection of an international architectural "dream team" to redevelop the soon-to-be-abandoned exhibition fairgrounds in the city. The team includes Daniel Libeskind, Zaha Hadid, and Arata Isozaki, each of whom will design a skyscraper on the plot. They are joined by Italian architect Pier Paolo Maggiora, of Turin.

The story began two years ago when Fiera Milano, which organizes the city's seemingly limitless rotation of fashion and design exhibitions, announced that it would relocate the exhibitions outside of the city, to an area under design by Massimiliano Fuksas. To assuage criticism that it was abandoning the city, Fiera promised that it would also redevelop the old fairgrounds. Instead, with the blessing of the city, it has sold the space for $608 million to an insurance consortium under the banner of City Life. The City Life proposal, with a master plan by Libeskind, will encompass about 15 city blocks. Initial plans call for significant green space surrounding three skyscrapers, each designed by a different architect. Isozaki's tower will be the tallest at 689 feet, dwarfing Milan's (and Italy's) tallest building, the concrete Pirelli tower (415 feet), designed by Gio Ponte in 1967.

The redevelopment of the former Fiera grounds is just the latest in a string of new projects getting under way in Milan, which is experiencing a renewal in building confidence unparalleled since political scandals wracked Italy in the 1980s and all but halted large-scale real estate development. Besides Fuksas's new, $910 million Fiera fairgrounds, to be completed in April 2005, a master plan by Cesar Pelli for a "city of fashion" was just approved. In April, Pei Cobb Freed and Partners, with Italian Paolo Caputo, was selected to build a new seat for the Lombardy regional government. The project will include a 525-foot skyscraper.



The proposed Milan towers.

Milan's city boosters laud the fairground project as bringing a global vision to the city. But not everyone concurs. Says Giulio Barazzetta, principal of SBG Architetti in Milan and a member of the Ordine degli Architetti della Provincia di Milano (the local architect's league), "It's global for global sake: three-star architects who are working side-by-side, but not together. Each tower is fine as a work of architecture, but in terms of providing a space that works for the city, I don't think it does that." *Paul Bennett*

Decker resigns as chief curator of National Building Museum

Howard Decker has left his post as chief curator at the National Building Museum in Washington, D.C. The museum abruptly announced Decker's resignation in early September; his final day was September 3.

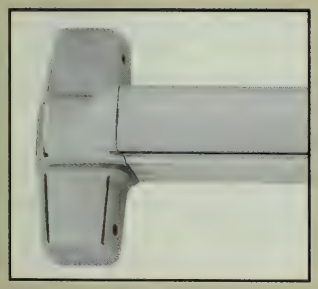
Museum director Chase Rynd, who has been with the museum for about a year, says he encouraged the resignation because he wants to replace the chief curator role with a format in which various curators report directly to him. "The position is not necessary right now," says Rynd. The resignation, notes Rynd, is part of museumwide changes to restructure management and encourage growth. The museum's board passed an ambitious new strategic plan this summer. Rynd says that the museum will now begin a search for an experienced curator specializing in architecture and design.

While he acknowledged that the move came quickly, Decker professed no hard feelings, pointing to Rynd's and the museum's desire to move in a new direction. "This gives them an opportunity to reallocate resources at the museum," he says. Decker had been chief curator for the past four years, arranging about 40 exhibitions and publishing five books. Prior to joining the museum, he was a founding principal at DLK Architecture in Chicago. Now, he says, he hopes to "catch my breath and see what challenges lay ahead." The new path will likely be in the design field, he adds. ***Sam Lubell***

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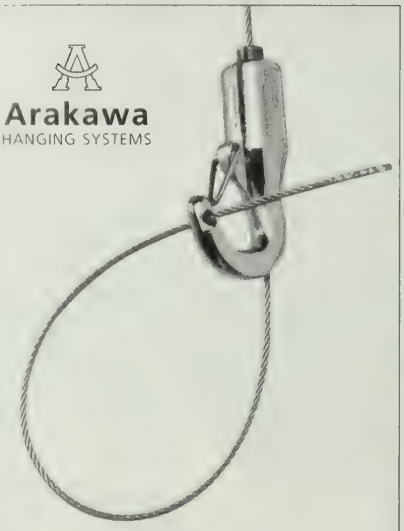
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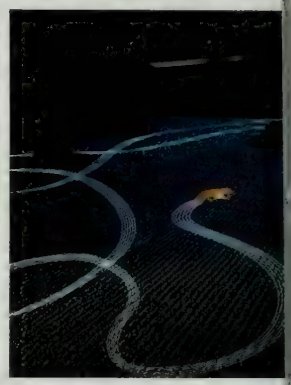
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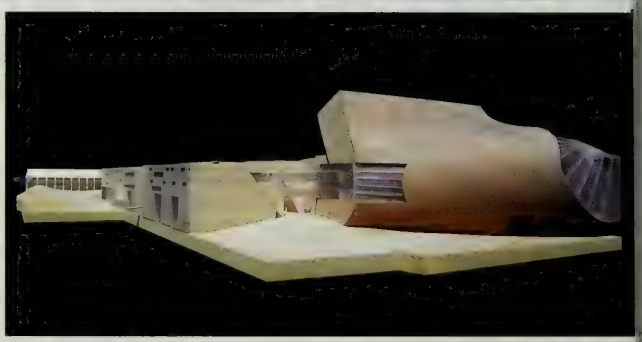


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Reality catches up with technology at the Venice Biennale

More than 80 years ago, in his book *Alpine Architecture*, Bruno Taut proposed buildings inspired by the crystalline structure of mountains, while Russian Constructivists sought to escape the tug of gravity. Those dreams are beginning to take concrete form in *Metamorph*, the title Kurt W. Forster gave to the exhibition of revolutionary buildings and projects he assembled in Venice as the centerpiece of this year's Architecture Biennale. Forster has chosen a specific future: a world of dynamic complexity, fusing figure and ground, and creating or responding to topography. New York firm Asymptote has installed the models on boatlike whiteboard platforms, their ends tilted up at different angles along the Corderia, the basilicalike space in the Arsenale. Texts, plans, and pictures are displayed on vertical panels to either side. Here, in a space that evokes past glories, a brave new world is taking shape.

It's hard not to be stirred by the energy and originality of the best of these projects, though most are displayed as sculptural objects, unrelated to the context. Other exhibitions—there are more than a dozen national pavilions—seek to overcome this limitation by emphasizing the urban or natural setting. Beyond the Corderia, in the basin of the Arsenale, is a floating pavilion that shows how cities around the world are reinventing their waterfronts, switching from industry to leisure, from shipping to housing. A major exhibition in the Italian Pavilion explores some of the best new concert halls—notably Plot's project for Stavenger in Norway, where two auditoriums bracket an amphitheater that flows organically out of their walls.

More than a dozen national pavilions expand on the core exhibitions. In the U.S. Pavilion, six emerging firms have each explored the potential of a common building type, from the highway interchange to the shopping center. The Dutch provide a historic overview of how their land has been transformed into a fusion of city and countryside. *Too Perfect: Nine New Denmarks* offers an escape from the trap of good taste and proposes radical ways of rebranding the country—one of which is to ship fresh water from Greenland to Africa. One of the more delightful surprises is an exhibition from Estonia of creative rural outhouses, one of which is shaped like a horse, with its tail serving as handrail to the access ramp. The Biennale remains on view through November 7.
Michael Webb

Projects for the Biennale by (clockwise, from top left) Asymptote, Kengo Kuma & Michitaka Hirose Niwa, Eric Owen Moss, and Predock_Frane.



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Chinese "architectural village" remakes masterpieces





A remake of Le Corbusier's Ronchamp houses squatters.

They like to copy things in China. Walk down the streets in any city and there are fake things everywhere: DVDs, Prada bags, Nike shoes, and even a Greek temple every so often. In Zhengzhou, the dusty capital of China's interior Henan province, one can run across Le Corbusier's Notre Dame du Haut chapel. The original stands in Ronchamp, a small town in eastern France. Somehow, an exact replica found its way here.

The reconstructed chapel, which is empty inside, forms part of a street of reproductions of notable works in Western architecture. Termed an "architectural village," the thoroughfare lies within a special economic zone of Zhengzhou. The zone's coordination committee commissioned the street about 10 years ago in the hope that it would be a tourist attraction for the large, but largely anonymous, city. The church—built by the Zhengzhou Institute of Planning and Design—has been standing in obscurity for most of the past decade.

The majority of the replica buildings here lie idle, though a few now serve as theme hotels. The poorly reconstructed structures reflect a particular emphasis on Italian, French, and Japanese architecture. A miniature of the Campanile at Venice's Piazza San Marco (pictured, center) and a distorted version of the Acropolis's Erechtheion, for example, neighbor Zhengzhou's Ronchamp. Surrounding the "architectural village" are Stalinist apartment and office blocks, creating a juxtaposition that is both lively and risible. "Most of the street is deserted, and there is no one in charge of it now," says an official at the coordination committee of Zhengzhou's Special Economic Zone, who refused to give her name. "They've forgotten about it."



Is this Venice? Vegas? No, China.

A small group of migrant workers live inside Zhengzhou's Ronchamp, explains Lao Wang, one of the building's residents. Wang is currently looking for work. Aside from serving as the backdrop for a CCTV (Chinese State TV) documentary, the building has received scant coverage in the Chinese press. But the whole scheme has been a subject of controversy on Chinese architecture Web sites, one of the few venues here where dissatisfaction is voiced. "Only the church is worth looking at," assures a Chinese architecture blogger, who visited the site while it was under construction.

For those familiar with architecture in today's China, the idea of a fake Corbusier alongside a reproduced Piazza San Marco is not all that surprising. The combination of China's building craze, rapid economic growth, and a national obsession with being of "international standard" is producing an architecture with very familiar results. In Beijing, Shanghai, and Shenzhen, for example, large-scale residential subdivisions are springing up that look eerily like suburban Florida; these subdivisions often have names like Yosemite, MOMA, or DBC (Dreaming Bright California). So, it was only a matter of time before a street like Zengzhou's appeared in the trenches of China's relentless development. Thanks to poor building materials and planning, these structures often fall into disrepair and become blights on the built landscape. But that doesn't seem to be stopping the wave of developments that mimic Western architectural styles, both traditional and modern, which often replace traditional vernacular Chinese buildings.

Many wonder whether copying foreign architecture is wise. In an architectural Web discussion, one aficionado used an old Chinese proverb to caution his countrymen: "If you try to draw a tiger, you will get a dog," he warns.

Daniel Elsea

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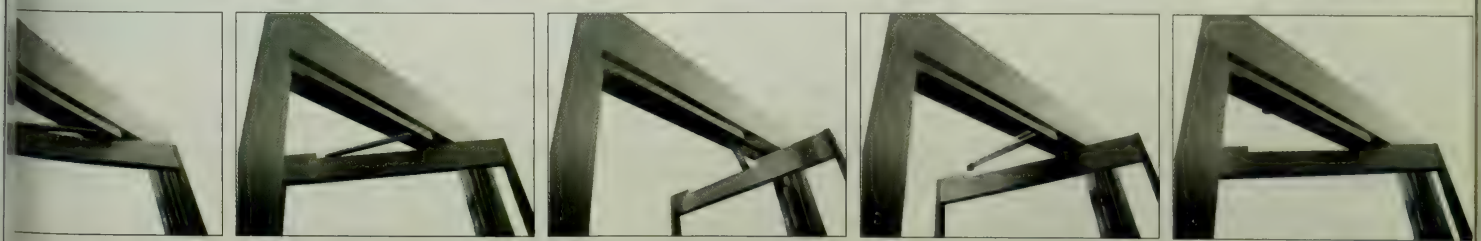
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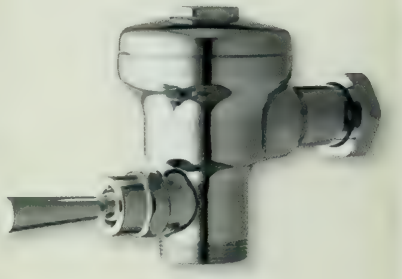
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LAB Architecture to design $1 billion Beijing project

Lab Architecture Studio of Melbourne, Australia, will design a new, 1.8-million-square-foot office, apartment, and retail development at the western edge of Beijing's Central Business District. The new development, called SOHO Shang Du, will be adjacent to Beijing's famed Landau Department Store, and will cost an estimated $1 billion.

SOHO Shang Du will comprise three towers built on neighboring city blocks. Two taller towers are on one block, while a smaller one is across an adjacent busy city street. The two elements are connected to the rest of the complex by a large, oblique bridge. The main towers will house loftlike office space and will be held together at their base by a commercial arcade; the third tower will be a retail galleria. The proposed design has a faceted image, with forms inspired by crystals. Peter Davidson, a director at Lab and SOHO Shang Du's lead architect, explained that the building's design was influenced by the radicals of fractal geometry. "Architecture is about geometry and life," says Davidson, who hopes SOHO Shang Du will be a new urban icon for Beijing.



Towers inspired by fractal geometry.

The project's developers are SOHO China, led by husband-and-wife team Shiyi Pan and Xin Zhang, whose projects include work by Shigeru Ban and Hong Kong's Rocco Yim. Their most recent development, Jianwai SOHO [RECORD, March 2004, page 90], has become one of Beijing's most sought-after properties. Pan and Zhang—who have emerged as patrons of high-quality architecture in an environment where developers often pay scant attention to building design—are working with Zaha Hadid to develop a large residential subdivision in Beijing.

"My mission is to find beautiful things and bring them to China," says Zhang, who was initially drawn to Lab because of its design of Federation Square in Melbourne, which is also clad in labyrinthine geometric facades.

Despite a recent downturn in China's overheated construction market, construction is set to begin in October and end by late 2006. *D.E.*

Will number crunching fix architecture's diversity crisis?

Ted Landsmark, AIA, chair of the AIA Diversity Committee, is—like most in architecture—miffed at why long-employed methods aimed to address the profession's notoriously low minority and female participation, such as internships and scholarships, have had so little impact over the past 30 years.

"Before we pour significant resources into these programs, we have to know what works," says Landsmark. "Otherwise, we're just promoting programs that make us feel good, without effectively changing the demographics of the profession. We can do better than that."

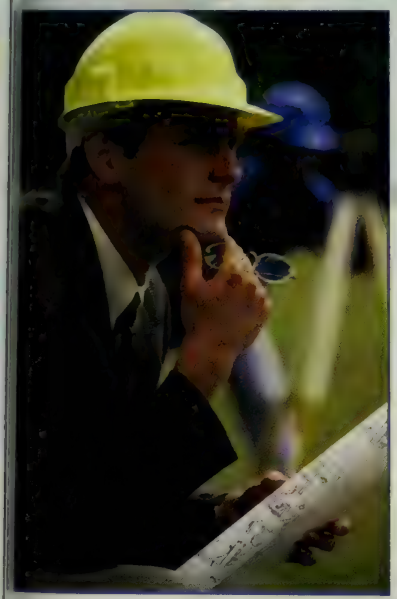
To help turn things around, Landsmark contributed to a resolution, ratified by the AIA board in September, to spur diversity in the profession. The resolution takes a new approach: number crunching. The AIA (with the help of a to-be-hired consultant) plans to obtain extensive figures about minority and female access to the profession, helping paint a clearer picture of why so few of these groups enter and stay in architecture, and laying the groundwork for future changes.

"We need to find out what these problems are," says Elisabeth Casqueiro, managing director of Alliances at the AIA, who points to low salaries and long-standing biases as reasons for architecture's diversity gap, but concedes causes for the issue remain largely a mystery. Outside of cursory data obtained from its Firm Survey—which shows 1 percent minority membership and 11 percent female membership—the AIA's data on minority representation is "disconnected and incomplete," says Landsmark.

The consulting firm will also carry out focus groups, explore models in other professions, such as law and medicine, and compare data with architectural organizations such as the American Collegiate Schools of Architecture (ACSA), the National Collegiate Accreditation Board (NCARB), the National Accreditation Board (NAB), and the National Organization of Minority Architects (NOMA). *S.L.*

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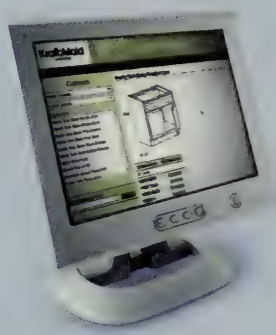
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Writers serve as muses for architects' projects in Princeton

Architects are not known for their writing expertise. But no one said they couldn't be inspired by great writing. Such is the impetus for a Princeton, New Jersey, project called "Writers Block," in which architects and builders have created small pavilions dedicated to the works and spirit of some of the many writing luminaries in the area, including Joyce Carol Oates, Cornel West, Peter Benchley, and Fran Lebowitz.

Established by Princeton-based landscaper and self-professed "pseudo academic" Peter Soderman, with local architect Kevin Wilkes, AIA, the project includes 10 architect/builder teams and 10 pavilions, or "follies," as the two call them. What is a folly? "A garden element somewhere between whimsical and impractical," explains Wilkes.

The projects—unrefined works in a very refined town—are settled in a 15,000-square-foot, bucolic landscape of newly planted corn stalks, sunflowers, and zinnias on what used to be a temporary parking lot. The goal, says Soderman, is to find new forms, provide places for contemplation, and encourage writers to give readings inside. Few have made the trip so far, except Oates, who visited her folly in August. It is a jumble of spruce beams with a tin roof created by local architect Gil Rampy, who was moved by Oates's direct insights into life's often "unvarnished" difficulties, and her claim that she is inspired by running, when "imagination is set into motion".

The teams, which immersed themselves in the subjects' books (or lectures, in Rampy's case) for ideas, designed the structures in May, began building in late June, and finished in late August. The results are an interesting experiment in design inspiration, says Wilkes. "Most of us architects are interested in novelty, and it becomes harder and harder to find," he notes. His own folly, built for Princeton Civil War historian James McPherson, includes two fluted tuscan wood columns from a home Wilkes renovated, representing the patrician South, and two columns made of galvanized metal culvert pipes from an old solar house, representing the industrial North. The two opposing sides support the structure, to signify unity. Wilkes, who was raised in New York by a mother from Georgia, says the experience helped him begin to come to terms with his upbringing, in which North and South played often competing roles. "I was able to look at the war from a new perspective and let some personal issues sit in the structure rather than in my mind," he says.

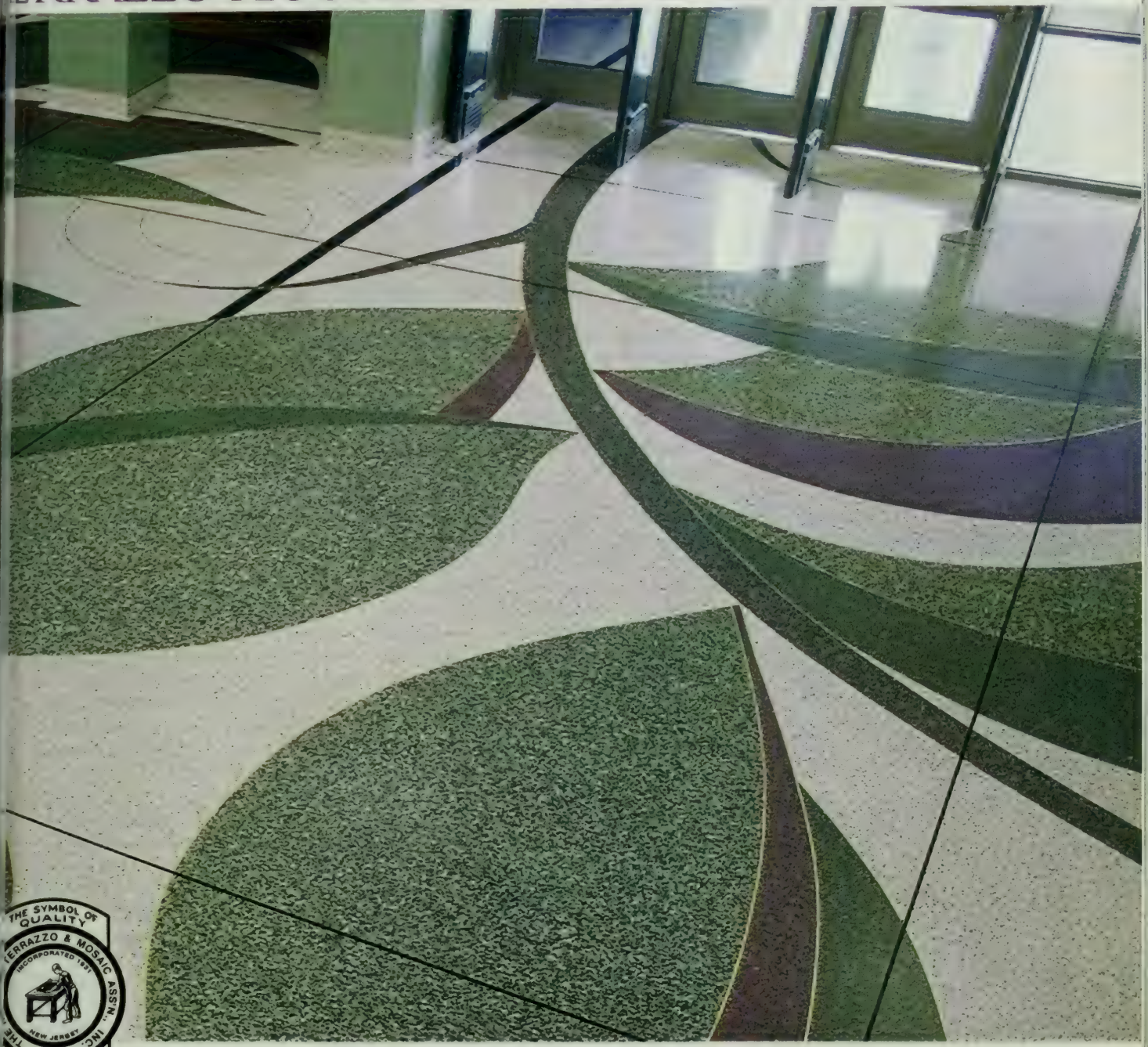


A folly for James McPherson by Kevin Wilkes, AIA (top); a pyramid-shaped folly for Paul Krugman, by Gil Rampy (center); and one for Cornel West, by Jon Nastasi and Sharon McHugh (left).

Other follies include a cedar and oak pyramid with a glass eye on top, mimicking the back of a dollar bill, for left-leaning writer Paul Krugman, and a parabolic form for writer Cornel West by architects John Nastasi and Sharon McHugh, made of synthetic, expanded honeycomb material. The flexible structure's geometry both distorts and projects peoples' images, which Nastasi points out "is all about breaking through barriers," like those of race.

When the program ends in late October, the follies will be auctioned off to help recoup construction costs, and the space will be used by a local developer to build condominiums. But Soderman hopes to begin a tradition. "Hopefully, this will become part of this town's culture." He adds, "In a culture of homogeneity, people are clinging to real, concrete things." *S.L.*

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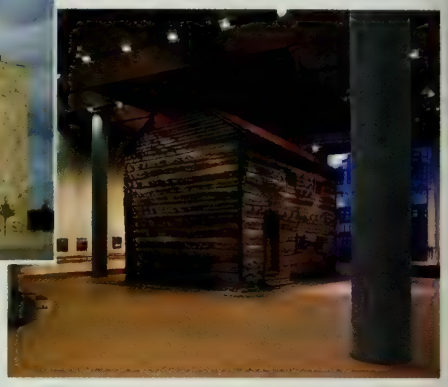
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The Underground Railroad Freedom Center features undulating forms (left) and a reconstructed slave pen (below).

Freedom Center headlines growing list of African-American cultural centers

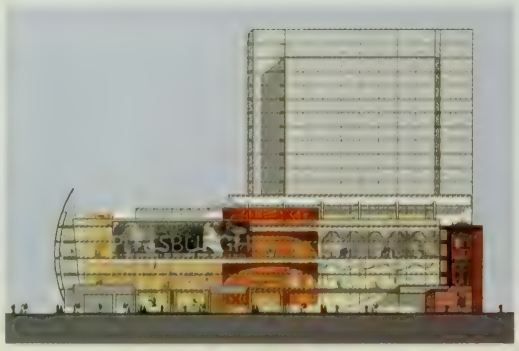
The story of the culture and history of African-Americans is now finding a home in more than 25 museum buildings either newly constructed or planned in the United States. The most recent is the centerpiece of Cincinnati's billion-dollar waterfront redevelopment, the National Underground Railroad Freedom Center, which opened in late August on the shores of the Ohio River—the symbolic dividing point between the South and the North. Designed by Blackburn Architects of Indianapolis, lead architects with design consultants BOORA Architects of Portland, Oregon, the $110 million museum powerfully portrays the slaves' struggles for freedom.

Clad mainly in copper and travertine, the museum is composed of three sculptural pavilions housing a lobby and welcome hall; a large, multiuse theater; and exhibition space. The museum also includes smaller theaters, educational facilities, a research institute, and public roof garden. Curving pathways between the pavilions symbolize the slaves' circuitous routes to the north. Inside, a reconstructed wooden slave pen serves as a focal point in the exhibition area.

The design team was selected in the late 1990s. According to his widow, Alpha Blackburn, who is now the C.E.O. of Blackburn Architects, the design reflects the vision of the firm's founder, Walter Blackburn, an African-American architect who died in 2000. "We knew this building could transform people's opinions," she told RECORD.

Other upcoming African-American cultural buildings include the California African American Museum in Los Angeles (Huff + Gooden Architects), the Martin Luther King, Jr. National Memorial in Washington, D.C. (ROMA Design Group), the African-American Cultural Center of Greater Pittsburgh (Ai), and the National Slavery Museum in Fredericksburg, Virginia (Pei Partnership).

The Freelon Group of Raleigh-Durham, North Carolina, is designing several such projects to be completed in 2005, including the Museum of the African Diaspora in San Francisco, the Reginald F. Lewis Museum of Maryland African-American History and Culture, in Baltimore (with RTKL), and the International Civil Rights Center & Museum in Greensboro, North Carolina. The increased number of such projects is in part due to "the baby boom generation looking back and contemplating our history and wanting to see that expressed in tangible ways," notes firm president Philip Freelon, FAIA. *J.E.C.*





Ai's African-American Cultural Center of Greater Pittsburgh (above), and Freelon's Museum of the African Diaspora in San Francisco (right).



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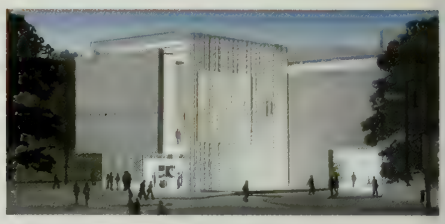
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University of Michigan museum turned inside out



On the heels of its recently completed Contemporary Art Museum in St. Louis, Oregon-based Allied Works Architecture has designed a $35 million, 57,000-square-foot addition and renovation to the University of Michigan Museum of Art.

A critical factor in the design, which will double the museum's current space, is its connection to the university and to Ann Arbor, Michigan, says museum director James Steward. "One of our central goals has been to turn the museum inside out, to make it dramatically more accessible to our students and the broad community," says Steward. Allied Works' design achieves this interplay through strategically placed transparent facades that allow for controlled views in and out of gallery spaces and public areas. At night, light emanating from the glass will make the addition a recognizable beacon. "The expansion will serve as a catalyst for new activities and experiences," says firm principal Brad Cloepfil, AIA.

The materials and scale will be sympathetic to the Beaux-Arts Alumni Memorial Hall, the museum's existing facility, slated to receive systems upgrades and restoration. The proposal will add gallery space, public gathering areas, an auditorium, and an outdoor gallery, among other elements. Ground will be broken in 2006, with an expected completion date of 2008. *Audrey Beaton*

San Diego Railway baggage building to become new galleries

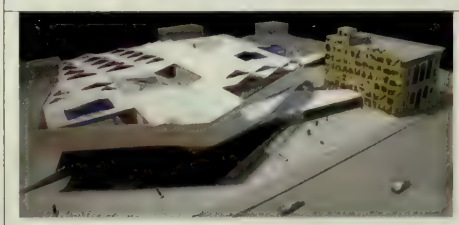
San Diego's historic central train station will soon house an interesting new element: a museum. New York–based Gluckman Mayner is converting the Mission Style station's former baggage building into the San Diego Museum of Contemporary Art.



The 13,000-square-foot building will contain large-scale installations, a black-box area, and a small-scale exhibition space, says principal Richard Gluckman, FAIA. Its rooms, he adds, will be highly flexible and will sit under lofty, 38-foot-high ceilings lit dramatically with clerestory windows.

The station's former Railway Express Agency, located adjacent to the museum, will be the site of a roughly 15,000-square-foot support space housing offices, meeting rooms, and educational facilities. The red building, called the "caboose" for its location and color, will maintain a contemporary style, thanks in part to simple geometries and vertical bands of channeled glass.

Local firm Heritage Architecture and Planning is performing the seismic upgrading of the baggage building's shell and its exterior renovation. The product is scheduled for a 2006 completion. *S.L.*



Maltzan's "floating spaceship" design for Fresno

Michael Maltzan's design for a Fresno Metropolitan Museum addition has received board approval. The octagonal-shaped, 75,820-square-foot building, which resembles a low, hovering spaceship, will be perched 30 feet above the ground atop a grid of two-way steel trusses and a network of scaffolds.

The design cantilevers nearly 100 feet over a plaza and has extensive glazing, three double-height floors, and an articulated wave roofline that features an outdoor auditorium. It will house 30,000 square feet of art and science galleries, a media center, learning labs, offices, an observatory, café, and store.

The museum is now housed in a 71-year-old Beaux-Arts building in the city's arts district that is the former home of *The Fresno Bee* newspaper. After capital fund-raising is complete, renovation of the Bee Building is scheduled to finish in 2005, followed by the new building in fall of 2007. *T.I.*

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Rose Museum addition focuses on transparency

Shigeru Ban, in association with Dean Maltz Architect, recently won the competition for the expansion of the Rose Art Museum at Brandeis University. The pair approached the project through the concepts of flexibility, transparency, access, and views. "The nature of museums has changed," explains Maltz. "They are kind of like warehouses for art."



Conceptually, Ban and Maltz bring a new image to the museum but maintain its initial concept. The new space is constructed of a structural-glass facade on top of the existing brick wall. White panels of either metal or stucco mark the west and north elevations. The design adds a new administrative space, shipping and receiving area, art storage and workroom, workshop, and mechanical room, all planned for ease of movement and flexibility.

The architects capitalized on an opportunity to convert the upper level of the museum into a reception hall, as originally envisioned by Max Abramovitz (see News, page 31) in 1961, by relocating and combining existing galleries with the new spaces. The expected completion date is 2007. *Audrey Beaton*

Hunter addition emulates its natural surroundings



Construction began in march on a $19.5 million expansion and renovation project for the Hunter Museum of American Art in Chattanooga, Tennessee. Los Angeles–based Randall Stout Architects designed the 29,000-square-foot project. Their plan attempts to bring cohesiveness to the 1904 historic mansion and 1970s East and North Wing additions that make up the existing museum.

The addition adds a Temporary Exhibitions gallery, an atriumlike lobby, auditorium, café, gift shop, and outdoor sculpture terrace. Visually, the addition reflects its surroundings. It is clad in oxidized zinc panels that resemble the 80-foot limestone bluff on which it sits, and its curving stainless-steel roof emulates the neighboring Tennessee River and nearby rock formations.

"I want the addition to connect with the heart and soul of Chattanooga," says Stout. "The building forms are, from every city vantage point, reaching out to welcome you." The new addition will eventually be connected to Chattanooga's downtown by a pedestrian bridge, also designed by Randall Stout Architects with Derthick Henley Wilkerson Architects. The addition will be completed in late spring of 2005. *A.B.*

Graves's Minneapolis addition: classic or cliché?

The design for Michael Graves & Associates' classically inspired addition for the Minneapolis Institute of Arts is raising debate among local architects. With the 117,000-square-foot expansion, the firm will attempt to add its signature to the original 1915 McKim, Mead and White Neoclassic structure of light gray granite, and to Kenzo Tange's white brick Minimalist facade of 1974.



Graves's design, charged with bringing the museum into the 21st century, tries to respect both styles. Recessed stone panels continue the rhythm of the Classical windows, while the new wing sleekly wraps the end of the building in a Modern pavilion. Inside, a solid dome caps a three-story atrium, echoing the museum's original oculus. Causing debate is the light buff color of the German Jurastone chosen by the Graves team and associate architects RSP. Robert Jacobsen, the museum's associate director for exhibitions and collections, asserts, "Michael's design for us is a happy kind of marriage, a reinterpretation of a glorious space." However, a group of Minnesota Modernists insist it appears Postmodern. One architect comments, "The addition is simply another big box of museum space pushed awkwardly against the existing structure." *Bette Hammel*

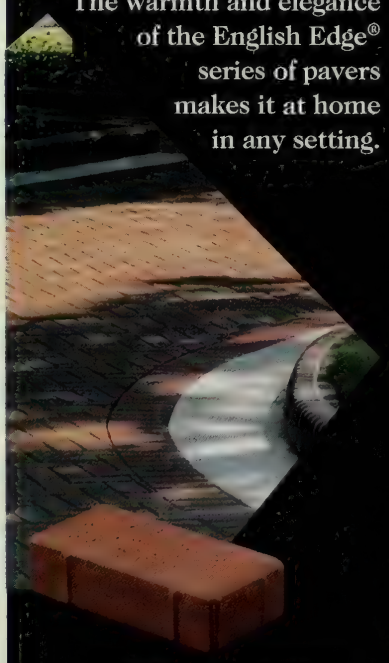

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News Briefs



An artwork encourages visitors to take the mike.

Freedom of information Just in time for election season, architect Laurie Hawkinson has collaborated with several New York artists to create a public artwork dedicated to free speech called *Freedom of Expression National Monument*. The red steel structure, whose design was inspired by Russian Constructivism, includes a massive megaphone, through which people can shout their opinions on world matters, or anything else. The work will sit in Foley Square in Manhattan through November 13. The first version of the sculpture stood in the Battery Park City Landfill in 1984. *S.L.*

Steve Jobs v. historic preservationists Apple and Pixar chief executive Steve Jobs is seeking permission to demolish his 1926 Spanish Colonial Revival home, which he deems an "abomination." In a public meeting, Jobs said that he planned to build a smaller home on the wooded site that would be better suited for his family.

But local preservationists are resisting the request, claiming that the Daniel C. Jackling estate qualifies for the California Register of Historic Resources and thus merits protection under the California Environmental Quality Act. The 17,000-square-foot, 14-bedroom mansion was designed for Jackling by George Washington Smith, a Santa Barbara architect who is considered the leading exponent of the Hispanic and Mediterranean revival of the 1920s. In 1924, Smith was commended by the Architectural League of New York for achieving "an effect that is at once original, personal, and distinctly American." *Allison Milionis*

Brooklyn Navy Yard to get overhaul The Brooklyn Navy Yard, a former shipbuilding yard turned industrial park in New York City, will undergo a massive revitalization in the next few years to help stimulate the city's fading manufacturing economy. In addition to adding new facilities and infrastructure, the Brooklyn Navy Yard Development Corporation (BNYDC) plans to create as much as 500,000 square feet of additional space to the existing 300-acre swath of land that is now home to a robust industrial community. The BNYDC would not disclose what it plans to spend on the project, but the city has said it is kicking in $71 million from its capital budget to improve infrastructure such as roads, sewage, and electricity over the next five years. *Christina Rogers*

***Nest* magazine closes** *Nest*, the interior design world's most eccentric magazine, is to cease publication after its fall 2004 issue. During its seven-year run, *Nest* won two National Magazine awards and had a cultlike readership. Architect Robert Venturi, novelist John Banville, photographer Nan Goldin, and other prominent arts figures contributed. But despite *Nest*'s striking design and its high-profile talent, the magazine reportedly was a money-hemorrhaging formula. It primarily owed its survival to the financial resources of its visionary publisher and editor in chief, Joseph Holtzman. However, despite the magazine's relatively poor commercial prospects, *Nest*'s literary editor, Matthew Stadler, insists that the real reason for ending publication is that the magazine has run its course. "We were interested in stopping before it became boring," says Stadler. "It wasn't the lack of profit that killed it, it was an aesthetic choice. Joseph Holtzman funded the magazine all the way through, and if it continued to be interesting, he would have happily funded it forever." *Alex Ulam*

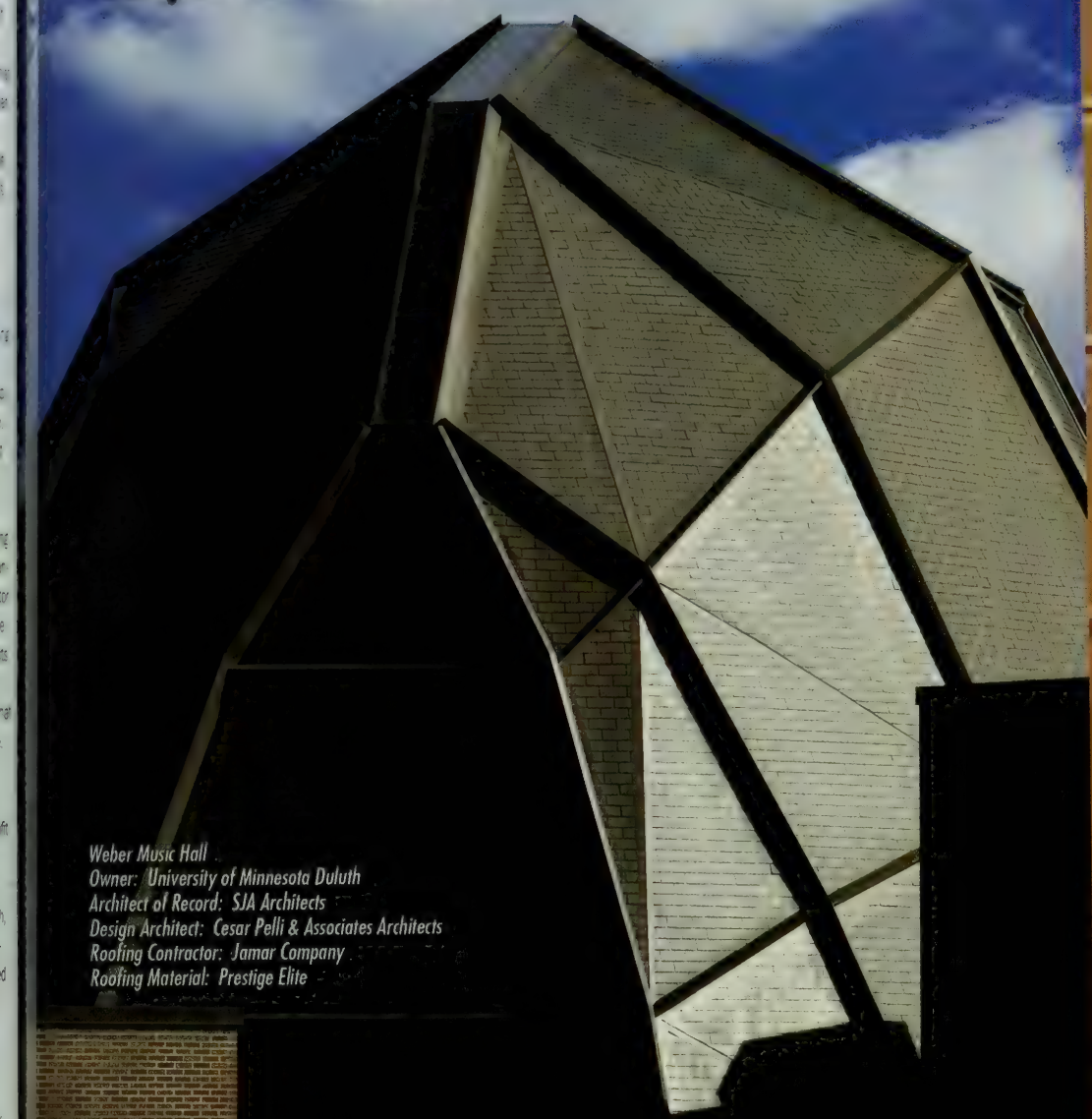


Trump's planned tower.

Trump's newest tower New York developer Donald Trump recently unveiled plans for a new, $300 million, 64-story hotel/apartment tower on the Las Vegas Strip. Designed by local firm Bergman, Walls & Associates, the 645-foot glass tower will be the city's tallest building. The 1.6-million-square-foot building will include more than 1,000 hotel-style units ranging from 636 square feet to 1,057 square feet, plus such luxury amenities as a spa, salon, and restaurants. The new "Trump Tower Las Vegas" is expected to break ground by early next year. *Tony Illia*

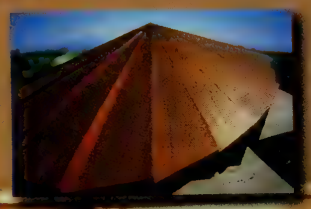
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Vulcraft 176-foot longspan double-pitched steel joists with arched bottom chords and 3" acoustical deck span the Carleton College Recreation Center.

The Carleton College Recreation Center in Northfield, Minnesota is a sports lover's place. The large column-free fieldhouse includes a six-lane running track; enclosing four courts for basketball, volleyball or tennis. Batting cages, long jump and pole vault pits, and a putting green round out the athletic offering.

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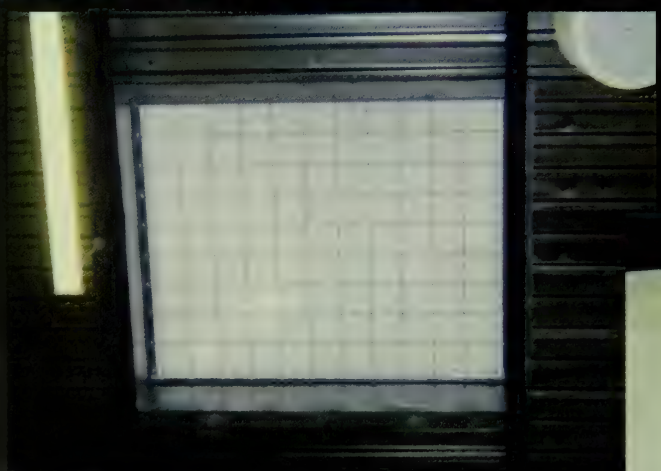


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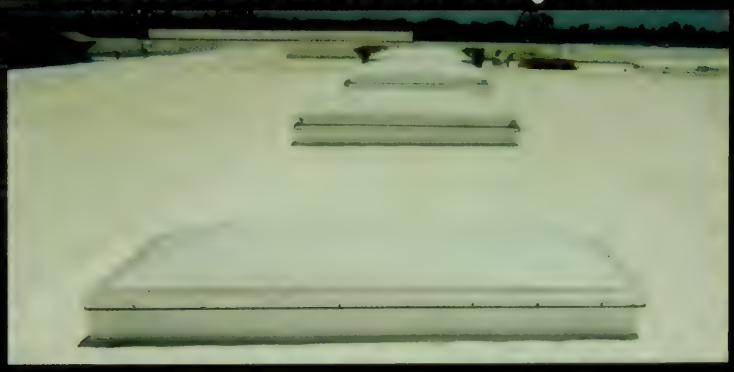
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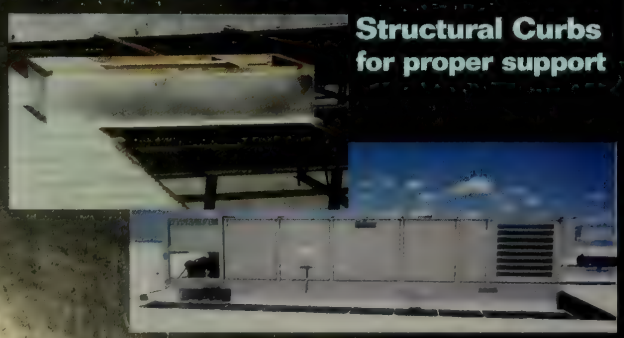
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Dates & Events

New and Upcoming Exhibitions

Bob the Roman: Heroic Antiquity & The Architecture of Robert Adam
New York City
October 1–December 4, 2004
An exhibition originated by the Sir John Sloane's Museum in London, it includes 70 drawings and focuses on the three years Robert Adam spent in Rome when he engaged both Charles-Louis Clerisseau and Giovanni Battista Piranesi to teach him to draw. In the Gallery at the New York School of Interior Design. Call 212/472-1500 or visit www.nysid.edu.

Second Annual Architecture Month
Fort Worth
October 2004
AIA Fort Worth will be educating, exploring, and celebrating architecture as art, not only with fellow architects, but with the broader community as well. Events will include exhibitions by local firms, competitions, lectures, and an architecture bicycle tour. Visit www.aiafortworth.org for further information.

Tactile Architecture 2004
Houston
November 4–7, 2004
As a special feature at the 30th annual International Quilt Festival, this annual juried exhibition challenges today's quilt makers to continue creating original works based on architectural themes and inspirations. At the George R. Brown Convention Center. Call 713/781-6864 or visit www.quilts.com.

Nine Museums by Yoshio Taniguchi
New York City
November 20, 2004–January 31, 2005
This opening exhibition will present the new Museum of Modern Art in the context of the other extraordinary art museums that Taniguchi has designed over the past 25 years and will address four integral themes in the architect's work: materials, proportion, natural light, and movement. At the Museum of Modern Art in Manhattan. For information, call 212/708-9400 or visit www.moma.org.

Huyghe + Corbusier: Harvard Project
Cambridge, Mass.
November 18, 2004–April 17, 2005
Pierre Huyghe celebrates the Carpenter Center in conjunction with the 40th anniversary of Le Corbusier's only North American building. The multimedia project will explore Le Corbusier's vision for the Carpenter Center, including multiple components that respond to the design history and its relationship to Harvard. At the Carpenter Center. Call 617/495-9400 or visit www.artmuseums.harvard.edu.

Van Gogh to Mondrian: Modern Art from the Kroeller-Mueller Museum
Atlanta
Opening October 19, 2004
An exhibition including architectural designs and models of the Kroeller-Mueller Museum produced by Hendrick Petrus Berlage, Henry van de Velde, and Ludwig Mies van der Rohe, as well as furniture commissioned by the Kroeller-Muellers from Berlage. At the High Museum of Art. Call 404/733-4400 or visit www.high.org.

Modern House Day Tour & Symposium
New Canaan, Conn.
October 23, 2004
A tour of internationally known Modern houses and a symposium featuring prominent editors, critics, and architects. Call 203/966-1776 for more information.

Washington: Symbol and City
Washington, D.C.
Opening October 9, 2004
The exhibition will examine the nation's capital from its earliest city plans and sometimes haphazard development to the origins of its distinctive monuments and the emergence of vibrant neighborhoods beyond the National Mall. Featuring large-scale touchable models of five of the capital city's architectural icons—the White House, the Capitol, the Washington Monument, and the Lincoln and Jefferson Memorials—the exhibition will also display maps, drawings, artifacts, videos, and photographs. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Ongoing Exhibitions

Building Revolution: Architecture in Cuba, 1959–1969
New York City
Through October 30, 2004
This exhibition features 200 archival images documenting over 70 architectural projects built by the Cuban government, reflecting specific social initiatives adopted immediately following the revolution. At Storefront for Architecture. Call 212/431-5795 or visit www.storefrontnews.org.

Mid-Century Modern Revisited: Design 1943–1953
Houston
Through November 28, 2004
This exhibition offers viewers a unique and wide-ranging introduction to one of the most creative and influential decades in the history of contemporary design. At Brazos Projects. For further information, visit www.brazosprojects.org .

Corvettes to Cuisinarts: Six Decades of Diversity in Industrial Design
Brooklyn
Through October 15, 2004
A celebration of the work of creative visionaries and designers who over the past 60 years studied and honed their craft at Pratt Institute. In the Rubelle and Norman Schafler Gallery. For information, visit www.pratt.edu/exhibition.

Sergio Rodrigues: Sultan in the Studio
New York City
Through November 17, 2004
Rodrigues is revered in his native Brazil as the country's first truly Modern designer and author of an authentically "Brazilian" style of furniture and objects. The first major American retrospective of his work will be on view at R 20th Century. Call 212/343-7979 or visit www.r20thcentury.com.

Civic Spirit: Changing the Course of Federal Design
New York City
Through November 10, 2004
An exhibition showcasing 19 projects, both completed and in progress, that have been commenced over the past decade under the Design Excellence Program of the United States General Services Administration. At the Center for Architecture. Visit www.aiany.org/civicspirit.

Symphony in Steel: Ironworkers and the Walt Disney Concert Hall
Washington, D.C.
Through November 28, 2004
An extensive series of photographs that simultaneously convey the danger of the ironworkers' jobs

while revealing the nascent sculptural form of Gehry's newest masterwork. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Lebbeus Woods: Experimental Architecture
Pittsburgh
Through January 16, 2005
One of the most innovative experimental architects working today, Lebbeus Woods combines an extraordinary mastery of drawing with a penetrating analysis of architectural and urban form, and social and political conditions, that is nourished by his wide knowledge of fields ranging from philosophy to cybernetics. At the Heinz Architectural Center. Call 412/622-3131 or visit www.cmoa.org.

Lectures, Conferences and Symposia

41st IMCL Conference Call for Papers
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Dialogues with Design Legends: Jens Risom and Jeffrey Bernett
New York City
October 12, 2004
Carl Magnusson, executive vice president of design for Knoll, will moderate a dialogue between Danish-born Jens Risom, who has developed furniture product lines for Knoll and Jensen as well as his own Jens Risom Design, and Jeffrey Bernett, whose multifaceted design firm, studio B, specializes in interior architecture, transportation architecture, furniture, fashion accessories, household products, design communication, and strategic planning. At MAKOR, the 92nd Street Y West Side location. Call 212/415-5500 or visit www.92Y.org.



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Dialogues with Design Legends: Hamilton Smith and LOT-EK
New York City
October 26, 2004
Rosalie Genevro, moderator, is the director of the Architecture League. Hamilton Smith is responsible for many of the public buildings designed by Marcel Breuer's firm, including the Whitney Museum of American Art. LOT-EK, founded by Ada Tolla and Giuseppe Lignano, focuses on residential and commercial projects. At MAKOR, the 92nd Street Y West Side location. Call 212/415-5500 or visit www.92Y.org.

Dialogues with Design Legends—Textiles: In Search of the Red Thread
New York City
November 9, 2004
With Sheila Hicks, textile designer; Hiroko Takeda, specializing in hand-woven designs; and moderated by Cara McCarty, curator of Decorative Arts and Design at the Saint Louis Art Museum. This series pairs major and emerging figures in the design field. At MAKOR, the 92nd Street Y West Side location. Call 212/415-5500 or visit www.92Y.org.

Construction Watch Tour: Elevation 314
Washington, D.C.
October 9, 2004
Architect/owner Russell Katz will lead a tour of this environmentally friendly apartment and retail building in northwest Washington. The sustainable design features of the building include a green roof and geothermal heating and cooling. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Hariri & Hariri – Architecture
Washington, D.C.
October 12, 2004
The New York–based firm explores today's dynamic, speed-oriented, globally connected, contemporary culture. Toward this goal, the firm has developed a revolutionary material called "The Digital-Block" to be used in the construction of transparent walls capable of transmitting and receiving information. Principal Gisue Hariri will discuss the firm's innovative work, which includes Sagaponac House–#43, and a proposal for the Museum of the 21st Century. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Toward the Sustainable City: Developing Green Urbanism
Washington, D.C.
October 14, 2004
Timothy Beatley of the University of Virginia studies ways to create more sustainable urban environ-

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ments. He will highlight creative strategies by which both American and European cities and towns have fundamentally reduced their ecological "footprints" while becoming more livable and equitable places. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Jones & Jones
Washington, D.C.
October 14, 2004
The design firm Jones & Jones Architects and Landscape Architects received the 2003 Firm Award from the American Society of Landscape Architects. Founding principals Grant Jones, FASLA, and Ilze Jones, AIA, FASLA, will discuss the Seattle-based firm's culturally and ecologically integrated work, including the Cedar River Watershed Education Center in Cedar Falls, Washington, and the Smithsonian's National Museum of the American Indian. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Is Washington Ripe for Smart Growth?
Washington, D.C.
October 25, 2004
Bruce Katz, founding director of the Center on Urban Metropolitan Policy at the Brookings Institute, will discuss the Washington metropolitan area and the unique challenges it poses to incorporate Smart Growth principles effectively. He will be joined by Christopher G. Miller, president of the Piedmont Environmental Council, who will discuss how these challenges relate to other metropolitan areas in the United States. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Reflections on Cultural Diplomacy at Home and Abroad
Washington, D.C.
October 26, 2004
Author and photographer Elizabeth Gill Lui documented America's embassies around the world in her book *Building Diplomacy: The Architecture of American Embassies*. She will share her convictions about the role that cultural diplomacy can play in the shaping of America's image in the world. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Berlin: Architektur, Politik und Kultur
Houston
October 6, 13, 20, and 27, 2004
This series of lectures will examine Berlin's archi-

tectural evolution. It will identify important episodes in Berlin's consequential and troubled history to show how architecture and urbanism have altered the city in response to major historical movements, and how the resulting buildings and their architects changed the course of architectural history. At Brown Auditorium, The Museum of Fine Arts. Call 713/348-4876 or visit www.rda.rice.edu.

Ron Witte
San Francisco
October 18, 2004
Ron Witte is associate professor of architecture at the Harvard Graduate School of Design. He will speak in Timken Lecture Hall, California College of the Arts. Call 415/703-9562.

Reinhold Martin
San Francisco
October 25, 2004
Reinhold Martin, assistant professor of architecture at Columbia University, will lecture in Timken Lecture Hall, California College of the Arts. Call 415/703-9562.

Dialogues on Design
New York City
October 6, 13, 20, and 27, 2004
A series with distinguished design journalist, Louis Oliver Gropp, in which he interviews leading interior designers and architects on their views on design and the design process. Jeffrey Bilhuber, Rose Tarlow, and Cathy Whitlock, as well as architect Hugh Hardy, FAIA, founding partner of Hardy Holzman Pfeiffer Associates, are all scheduled at the New York School of Interior Design. Call 212/472-1500 or visit www.nysid.edu.

National Bridge Conference
Atlanta
October 17–20, 2004
A conference running concurrently with the Precast/Prestressed Concrete Institute's (PCI) Annual Convention/Exhibition, "Bridges for Life" will recognize industry leaders and innovators of the past 50 years, while focusing on the future, the industry's next 50 years. At the Hyatt Regency. Call 312/786-0300 or visit www.pci.org.

Of Its Time: Changing Attitudes in Historic Preservation
New York City
October 16, 2004
The one-day conference will address issues challenging historic preservation, architectural practice, and urban planning through exploration of design theory. Hosted by the Institute of Classical Architecture & Classical America. Call 212/924-9686 or visit www.classicist.org.

Architecture Week: Celebrating Design Collaboration
New York City
October 2–10, 2004
Events include a conference bringing together architects from around the world to speak about the challenges and opportunities of international collaboration, the AIA New York Chapter Design Awards Program Exhibition, a Design-In Marathon, Play By Design for K-12 students, and the Heritage Ball. For more details, visit www.aia.org/international and www.aiany.org/architectureweek/design.html.

The Interdisciplinary Health-Care Enterprise: Weaving Design Through the Fabric of Research, Education, and Patient Care
Washington, D.C.
October 27–30, 2004
The Academy of Architecture for Health (AAH) annual fall conference will focus on the intersection of architecture with clinical care, medical education, and scientific research. At the Omni Shoreham Hotel. For more information, visit www.aia.org/ev_aah_fall04-conf.

METALCON International
Las Vegas
October 20–22, 2004
The annual conference and exhibition includes new product exhibits, a comprehensive educational program, and live-action demonstrations of the latest field techniques, as well as a session with an overview of the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System. At the Las Vegas Convention Center. Call 800/537-7765 or visit www.metalcon.com.

The International Concrete Repair Institute 2004 Fall Convention
San Francisco
October 20–22, 2004
The theme of the convention is Structural Enhancements, and it will consist of technical presentations, committee meetings, tabletop exhibits, networking opportunities, and special

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Jack Diamond, FRAIC, FAIA, principal of Diamond+Schmitt Architects

October 12
Hariri & Hariri–Architecture
Gisue Hariri, principal of Hariri & Hariri–Architecture

October 14
Jones & Jones
Grants Jones, FASLA, and Ilze Jones, AIA, FASLA, founding principals of Jones & Jones Architects and Landscape Architects

October 18
Patkau Architects
John Patkau, FRAIC, partner in Patkau Architects

exhibitions


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Dates & Events

events. At the Hilton San Francisco. Visit www.icri.org for more information.

The SMACNA 61st Annual Convention
Maui, Hawaii
October 24–28, 2004
The Sheet Metal and Air Conditioning Contractors' National Association is holding a wide variety of educational and self-development sessions presented by industry experts to provide solutions tailor-made to meet the technical and business management needs of sheet-metal and air-conditioning contractors. At the Grand Wailea Resort. Call 703/803-2998 or visit www.smacna.org.

The NFPA Fall Education Conference
Miami Beach
November 14–17, 2004
The National Fire Protection Association conference will provide professional development opportunities for fire and life safety specialists. At the Fontainebleau Hilton. For further information, visit www.nfpa.org/meetings.

Solar Power 2004 Conference and Trade Show
San Francisco
October 18–21, 2004
Solar Power 2004 will bring together top executives, utility representatives, policymakers, builders, contractors, engineers, and solar enthusiasts. At the Hyatt Regency San Francisco. Visit www.solarpower2004.com.

Architecture Exchange East
Richmond
November 10–12, 2004
The region's largest building and design conference, featuring more than 60 educational sessions for architects, planners, engineers, interior designers, contractors, and landscape architects. Paul Goldberger, Pulitzer Prize–winning architecture critic and *New Yorker* staff writer, will present the keynote address. At the Greater Richmond Convention Center. Call 804/644-3041 or visit www.aiava.org.

Signature Urban Objects—Designing the Civic Identity
Philadelphia
October 15–16, 2004
A conference on how the objects in the street have a vastly underutilized power to create place identity. Every trash bin, kiosk, and lamppost is an opportunity to "brand" a locality. At the University of the Arts. Call 215/717-6120 or visit www.signatureurbanobjects.org.

Taliesin West: Building in Harmony With Nature
Scottsdale, Ariz.
October 21–23, 2004
The Scottsdale site will host tours, presentations, and dinners honoring Frank Lloyd Wright's sensitivity to fragile lands. The conference will explore several of the design concepts that dominated Wright's 70-year career. For further information, call 480/627-5373 or visit www.franklloydwright.org.

CSI's 6th Annual Product Representative Academy
Denver
October 27–29, 2004
The Construction Specifications Institute's 6th annual conference will be held in the Denver City Center Marriott. Call 800/689-2900 or visit www.csinet.org/prainfo.

Build Boston's 1st Annual Spring Residential Design Convention and Tradeshow
Boston
April 6–7, 2005
This residential offspring of Build Boston will include two days of intense professional development opportunities and workshops for design and construction professionals, along with an exhibition hall filled with the latest building products and materials. At the Seaport World Trade Center. Call 800/544-1898 or visit www.architects.org.

The International Facility Management Association's (IFMA) World Workplace 2004
Salt Lake City
October 17–19, 2004
An Expo featuring products and services in the following areas: building products, carpeting, energy management, FM outsourcing, FM software and automation, furniture, maintenance and services, office environments, security, sustainability, and more. For further information, visit www.worldworkplace.org.

Competitions

2005 Rudy Bruner Award
Deadline: December 13, 2004

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Dates & Events

The Rudy Bruner Award is given to urban places that demonstrate the successful integration of effective process, meaningful values, and good design. RBA winners are distinguished by their social, economic, and contextual contributions to the urban environment, and often provide innovative solutions to our cities' most challenging problems. Call 617/715-3184 or visit www.brunerfoundation.org.

Flight 93 National Memorial Design Competition

Deadline: January 2005

The response to the violent acts in the skies over Southwestern Pennsylvania on September 11, 2001, will be a National Memorial to the people who died in what has become known as the first civilian act of defense in the war on terrorism. The design competition welcomes all submissions of ideas that will commemorate the 40 heroes of Flight 93. For more information, visit www.flight93memorialproject.org.

McCormick Tribune Foundation Icon/Centerpiece Competition

December 17, 2004

Architects, designers, and artists are invited to participate in a juried competition to create a defining work of art to serve as the centerpiece of a new museum dedicated to First Amendment rights and corresponding responsibilities. For more information, visit www.mccormickmuseum.org.

INawards

Deadline: October 12, 2004

As an opportunity to introduce innovative new designs from the Pacific Northwest to an international audience of peers and trade professionals, the International Interior Design Association (IIDA) Northern Pacific Chapter welcomes architects, interior designers, and industrial designers to submit entries of interior spaces and interior products completed after January 2002. Call 206/762-6471 or visit www.iida-northernpacific.org.

20th Anniversary Architecture in Perspective Competition

Deadline: December 3, 2004

The American Society of Architectural Illustrators' international competition honors the finest works of architectural illustration, both hand and digital. Call 614/552-3729 or visit www.asai.org for submission guidelines.

Canstruction: 12th Annual NYC Design/Build Competition

Deadline: October 15, 2004

Teams of New York City architects, engineers, contractors, designers, and students of schools of architecture, engineering, and design are welcome to design and build structures made entirely of canned foods to benefit the Food Bank for New York City. Call 212/792-4666 or visit www.canstruction.org.

Knokke Casino Architectural Competition

Deadline: November 15, 2004

The competition is an open invitation to architects from around the world to engage in the creative design of unique architecture for a new casino. For more information, visit www.knokke-heist.be.

Rome Prize 2005

Deadline: November 1, 2004

The American Academy in Rome fellowships are awarded in several fields, including architecture, design, historic preservation and conservation, as well as landscape architecture. For further information, call 212/751-7200x47 or visit www.aarome.org.

2005 Barrier-Free America Award

Deadline: November 5, 2004

With this national award, the Paralyzed Veterans of America (PVA) honors an individual for his or her sensitivity to the importance of accessible design, as well as the difference they have made through a particular project in achieving a barrier-free environment. Submissions welcome from individuals working in architecture, landscape architecture, construction, engineering, facilities management, building development, and public education. Call 202/416-7644 or visit www.accessibledesign.org.

Ceramic Tiles of Italy Design Competition

Deadline: January 30, 2005

North American architects and interior designers are invited to submit residential, commercial, or institutional projects featuring Italian ceramic tile, completed between January 2000 and January 2005. Visit www.italiatiles.com or www.italytile.com for details.

E-mail events and competitions information two months ahead of event or submission deadline to elisabeth_broome@mcgraw-hill.com.

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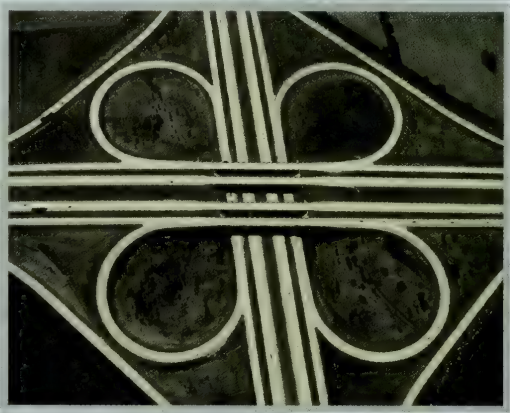
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For and about the new generation of architects

archrecord 2

FOR THE EMERGING ARCHITECT

A young firm in Montreal, NOMADE, is winning one large project after another. The partners have a multidisciplinary approach to designing architecture and are making a name for themselves through an intentional lack of formula or signature style. Find out more in Design and on our Web site. In Work, we examine the program New York Designs, which helps young designers gain a foothold in the business.

DESIGN

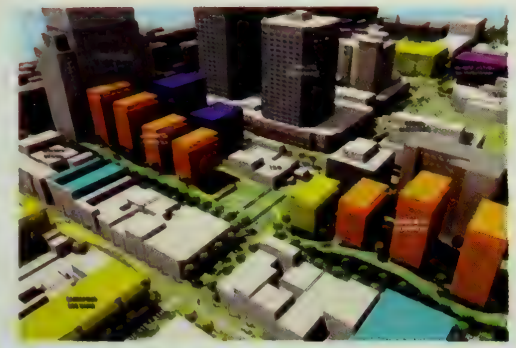
Integrating ideas in urban design



Although the three founding partners of Montreal-based NOMADE Architecture each received their degrees from the University of Montreal around the same time, it wasn't until working on cooperative projects while employed in different firms that Michel Lauzon, Martin Leblanc, and Jean Pelland (pictured, left to right) had the opportunity to meet. Leblanc explains, "After some discussion, we realized that we had the same ideas of how architecture should be and where it should go." They saw the glaring absence of a creative, multidisciplinary approach to the projects they were involved in. The trio also believes that their locale was a catalyst to opening their own firm. "One look at the architecture around Montreal, or lack thereof," states Pelland, "prompted us to create a firm that could differentiate itself from what was going on here." They founded NOMADE in 1999.

Based on their previous experience, each partner brings a specialized skill set to their work beyond basic architectural qualifications—Pelland, a knowledge of construction; Leblanc, expertise in technology; and Luzon, a background in project management and marketing. The anonymous moniker of the firm provides the first clue into NOMADE's driving force. Leblanc says, "Architecture should be a result of collective ideas. It should integrate the perspective of the client, the developers, the stockholders, and others who have a stake in the project." Many of NOMADE's large-scale projects, including Le Quartier des Spectacles—the entertainment district of Montreal—and the headquarters of Quebecor, incorporate the ideas of many outside of the architecture field as well as those within it, so it was decided that the firm's name should characterize a group where individual identity would not take precedence. "For us, it's more important to create an architecture relevant to each project rather than have a signature style," explains Lauzon.

Like many young firms, the three partners found themselves immersed in



Le Quartier des Spectacles, Montreal, Canada
The redesign of the entertainment district involves transforming vacant lots into urban, cultural, and economic elements—doubling the current residential units and creating parks, plazas, and retail spaces.

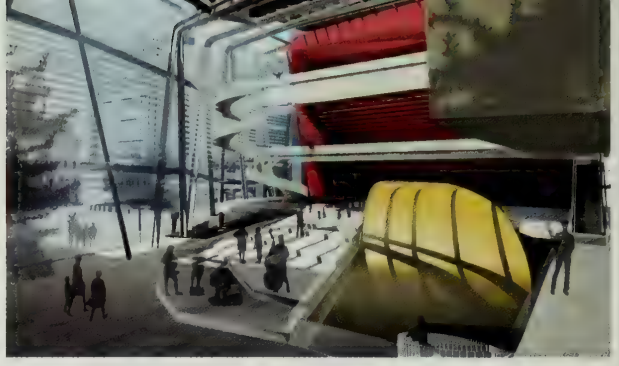


Quebecor Headquarters, Montreal, Canada
As the project and design architect on this renovation, NOMADE's task was to take the outdated building and create relevant architecture that accords with the media corporation's brand and the urban character of the area.



Canadian Museum for Human Rights, 2003
In this invited international competition, NOMADE teamed up with SOM to design a new museum in Winnipeg, Manitoba. The program included exhibition halls, a training center, and a concert hall.





Montreal Cultural and Administrative Complex, 2003
The multiuse design competition required new space for the Montreal Symphony Orchestra, the Montreal Conservatory of Dramatic Arts, the Conservatory of Music, and head offices for the Quebec government.

architectural competitions (more than 20 in the past five years) while working on smaller projects. They treat competitions as efforts of separate design studios, using them as an opportunity to envision large-scale projects not usually presented to fledgling firms, while also enabling them to collaborate with other architects. In a recent competition to design the Canadian Museum for Human Rights, they teamed up with SOM and were short-listed with higher-profile firms.

Perhaps not as common for other young architectural practices, the team's competition entries have garnered them new commissions, even when their design wasn't ultimately chosen as the winner. Upon seeing the firm's previous competition entries, the City of Montreal picked NOMADE for the enormous task of renovating the city's entertainment district. Recently, the partners were invited to China to partake in the first Architectural Biennial of Beijing and to speak on the state of architecture in Canada. The firm has also been hired as the lead consultant for a multiuse residential project in China.

These architects admit they haven't built much—but instead of seeing that as a handicap, they use it to their advantage. "Without a doubt, experience is important, but sometimes it can be an obstacle to creativity. We're at a stage now where we're flexible in our approach, and potential clients come to us if they're searching for unique answers," states Lauzon. Judging from their recent commissions, they should be providing answers for years to come. ***Randi Greenberg***

For more projects and competition entries by NOMADE, go to *archrecord.construction.com/archrecord2/*

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Space and cultivation for designers

Designers fresh out of school may have the drive to create, but chances are they lack business or marketing know-how. This lack of training has made it all but impossible for start-up design firms to begin their practice with a boom. However, with major contributions from New York State, HUD, and the Economic Development Administration totaling more than $6 million dollars for a new program called New York Designs, such firms now have a greater chance for early success in an incredibly competitive market.

New York Designs is an "incubator" located on the Long Island City campus of City University of New York's LaGuardia Community College. Currently, the test program is housed in a 4,000-square-foot unused loading dock of the International Design Center of New York warehouse, but it will soon be moving to the eighth floor of the same building, with more than 40,000 square feet at its disposal. Within this space, several business-growth services tailored for designers will be available.



Natalia Arguello, creative director of New York Designs, explains, "We'll be able to house 20 design firms at reduced rents, but we'll also be helping nontenant designers. The current plans for our new space will include a fully equipped workshop with state-of-the-art prototype machinery, conference rooms, a design library, and a gallery."

New York Designs also addresses the need these burgeoning designers have for all-important business skills. Both business counseling and classes are offered, and the design community is responding. Class attendance, for subjects that have varied from model making to marketing, have tripled in just two semesters.



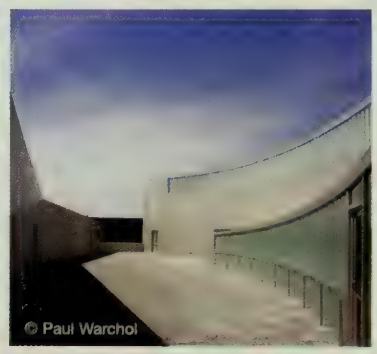
Plans for the future site of N.Y. Designs by Resolution: 4 Architecture (top). The Ori lamp by Nuf Design, a firm that works out of N.Y. Designs (bottom).

Arguello, who admits to her own lack of business savvy when she completed design school, knows firsthand how helpful this program can be to a designer. "Essentially, we're going to be a one-stop design center where the designer has everything they need under one roof," states Arguello. *R.G.*

For more information on N.Y. Designs, go to ***archrecord.construction.com/archrecord2/***









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Philadelphia sets a path toward revitalization through a redefined government role

Correspondent's File

By Joseph Kelly II

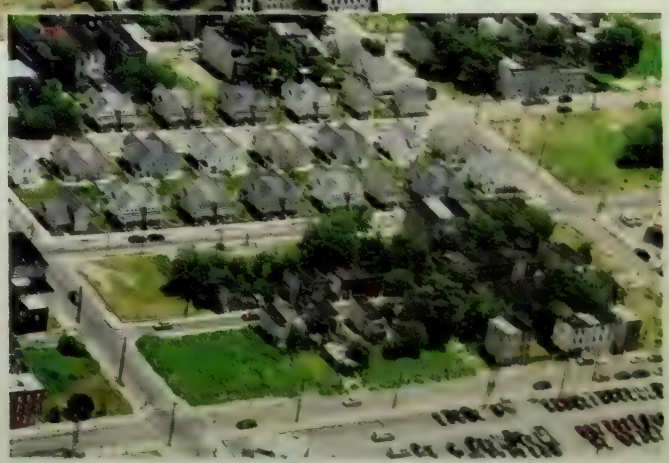




In the past four years, the City of Brotherly Love has become a hotbed of urban development and revitalization. In almost all of the nearly 70 neighborhoods in this 135-square-mile city, the sights, sounds, and signs of construction form part of the everyday pedestrian experience. The majority of the city's efforts are focused on transforming its infamously blighted neighborhoods into dynamic residential districts through the city's Neighborhood Transformation Initiative (NTI) and putting forward development projects that are reshaping the city's predominantly 18th- and 19th-century built environment into a dynamic setting relevant for sophisticated contemporary urban living. Presently, more than 4,000 new condo units, several cultural buildings, and nearly a dozen downtown towers are in design or under construction. Other major projects, such as Robert A.M. Stern's master plan to transform the city's former Navy Yard, will—once completed—establish Philadelphia as a major global urban center.

How has this happened so quickly? Much stems from a city government that appears—at least on the surface—to have transformed itself from an overbearing, inefficient machine into a transparent promoter of development and a successful arbiter of change. The new approach has spurred major public and private investment in large civic, commercial, and residential projects. Hence, by becoming more transparent and turning to

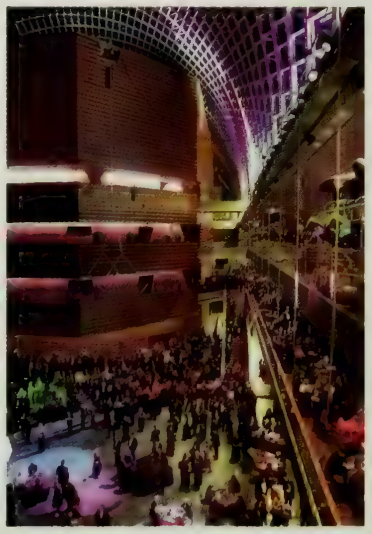




Philadelphia's skyline (top left); Pelli's Cira Center (top right). A before (left) and after (below) scenario from the Neighborhood Transformation Initiative, which fights blight.

Joseph Kelly II writes for RECORD, Architectural Lighting, Architecture, Metropolis, I.D., *and* ICON. *He is currently working on a book on the redevelopment and revitalization of Philadelphia.*





Moshe Safdie's planned addition to the public library (above); and Rafael Viñoly's completed Kimmel Center for the Performing Arts (left).

comm[illegible]y and civic groups for the [illegible]p it needs in devising civic change (partly because this financially strapped city lacks the funds to realize change), the city's approac[illegible] is epitomized by the crop of mo[illegible]ern buildings now or soon to be lining its streets.

Problems of the past

For as long as anyone can remember, Philadelphia has played a notorious behind-the-scenes pay-to-play political game of governing: Political supporters and bureaucratic friends, whether qualified or not, have often received city contracts in return for campaign contributions and other favors, and city leaders have had unchallenged authority over building projects. Edmund Bacon, head of the Philadelphia City Planning Commission (PCPC) from the 1950s through the 1970s, held sole authority to select architects for Philadelphia's previous urban renewal effort. The face of the city arguably changed from a more structurally diverse and cosmopolitan character into a sterile downtown dominated by bland architecture. Bacon also selected designers who delivered schemes that accorded only with his ideas, focusing on Center City and ignoring the neighborhoods, which at that time were showing initial signs of decay following the first migration of city residents to the suburbs.

Perhaps more crippling to the city has been the astonishingly high wage tax, which was introduced in 1939 as a temporary solution to combat the effects of the Depression. Philadelphia continues to inflict this tax on residents to generate over half its annual revenue. (According to the Pennsylvania Economy League, the city's percentage of wage-tax dependence, 56, is the highest in the nation; Detroit is second with a 41 percent dependency.) As a result, businesses and residents have long fled to the suburbs, bleeding the urban center of its industrial core, jobs, population, and revenue sources. In the aftermath, entire once-thriving middle-class neighborhoods now stand as heavily blighted inner-city ghettos.

Fostering change

A key to decentralizing Philadelphia's authority has been its network of community-development corporations and quasi-government authorities, which are helping redevelop the city through a more public process. These include the nationally recognized Center City District, which recently completed a community-based effort to relight the Benjamin Franklin Parkway. Other organizations include the University City District (UCD) and Old City District (OCD), which are transforming important underdeveloped or underrealized spaces, such as the Delaware and Schuylkill River waterfronts and the neighborhoods surrounding Center City, into thriving communities. Meanwhile, NTI has used a $300 million municipal bond to clean and clear large tracts of land, offering these lots to private developers at a minimal cost and spurring revitalization of heavily blighted neighborhoods.

Topping this activity is a heightened level of public discourse involving design and redevelopment issues. Residents and the local press are better versed in the economics and the politics of urban renewal than ever before, and they are better able to discuss current revitalization and engage in public forums on design change, held by local organizations like the Design Advocacy Group, a coalition of architects and planners that advocates for design change through lobbying, forums, and regular newspaper columns.

Additionally, after years of pressure from the local business community to make the city more competitive, Mayor John Street is finally addressing ways to lower the wage tax, conveying a new understanding of openness in municipal politics. The current administration has also established incentives to encourage large and small development via a 10-year tax abatement for new residential construction and mortgage-assistance programs for low-income individuals.

Some of the major architects working in Philadelphia

Tadao Ando: $50 million Calder Museum is set to open in 2006.
Richard Gluckman: $70 million expansion of the Philadelphia Museum of Art's administrative office and gallery complex.
Robert A.M. Stern: Master plan for residential and commercial district at the former Navy Yard; $140 million, 33-story residential high-rise; $500 million, 70-story downtown Comcast office tower.
Cesar Pelli: 35-story, $130 million Cira Center office tower.
SHoP: Four new downtown condominium projects.
Rafael Viñoly: $265 million Kimmel Center For Performing Arts.
Moshe Safdie: $110 million expansion to and renovation of the Central Branch of the Free Library of Philadelphia.
Pei Cobb Freed & Partners: $138 million National Constitution Center.
Kieran Timberlake: The Wharton School's Levine Hall, and future project to transform Philadelphia's main USPS complex into university offices.
NBBJ: $520 million Lincoln Financial Field (football).
HOK: $350 million Citizen's Bank Park (baseball).
KPF: $500 million International Terminal at Phila. International Airport.
Michael Graves: $150 million Philadelphia Eagles NovaCare Complex.

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The results

The private-development focus, public input, and government transparency has in only three years inspired a proliferation of recently completed, or planned, housing, commercial, office, and community-development projects—many with price tags in the hundreds of millions. Many carry such designer name tags as Rafael Viñoly, FAIA, Michael Graves, FAIA, Robert A.M. Stern, FAIA, Cesar Pelli, FAIA, the firms of KPF, NBBJ, HOK, SHoP, Grimshaw, The Olin Partnership, Richard Gluckman, FAIA, Moshe Safdie, FAIA, and Tadao Ando, among others.

Funding from Philadelphia's major private foundations, such as The William Penn Foundation and the Pew Charitable Trusts, is aiding redevelopment along such areas as the Benjamin Franklin Parkway (the city's focal cultural corridor), which will soon contain Gluckman's $70 million redesign of the Philadelphia Museum of Art's new administrative and gallery complex; Safdie's $110 million redesign of the Central Branch of the Free Library of Philadelphia; Ando's subterranean design for the new $50 million Calder Museum; and the proposed move of the famed Barnes Foundation from its home in suburban Philadelphia.

The scope of private residential, commercial, and office projects can take your breath away: Pelli is designing Cira Center, a 35-story, $130 million office tower near the city's central train station, while Stern's reimagination of the city's old Navy Yard will provide a major mixed-use development and an entire new neighborhood. New York–based SHoP is designing four condominium complexes, including Old City 108, a 12-story luxury condo in the heart of the historic district. Wallace Roberts & Todd is designing a $280 million, five-tower gated condo complex called Waterfront Square on the North Delaware River waterfront, which includes its own marina. Situated near this complex will stand the new $700 million, four-tower World Trade Center of Greater Philadelphia.

NTI's success has also been impressive. During the past three years, it has cleaned up more than 31,000 vacant lots, demolished 4,100 of the most dangerous of Philadelphia's 30,000 abandoned buildings, and removed 185,000 abandoned vehicles and 15,081 dangerous trees. NTI also encouraged the development of 5,128 affordable housing units, 5,000 market-rate housing units, and 2,100 housing units in large devel-



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opments, as well as fostering the rehabilitation of 11,673 homes in the city.

Criticisms and responses

But John Gallery, executive director of the Preservation Alliance for Greater Philadelphia, believes unplanned and decentralized development fails to appropriately consider community resources, such as schools and medical and community-support facilities, and fails to articulate a vision for growth throughout the city and in the neighborhoods. He also worries that the NTI program does not adequately prepare for the future. "[The city] lacks vision about what might happen to the so-called transforming neighborhoods after all of this [NTI] demolition occurs," says Gallery, who worked for the PCPC during the 1960s under Bacon and later headed the city's Office of Housing and Community Development.

In contrast, NTI director Patricia Smith believes that putting together a master plan would be unproductive. Such a plan, she explains, would likely be outdated when complete because of the extraordinary level of development activity throughout the city. PCPC executive director Maxine Griffith sides with Smith, explaining that the most important activity is working with neighborhood groups to give them recommendations for developing their communities.

And though Mayor John Street is now practicing a more open, democratic form of governing, efforts haven't always reflected a community-minded approach. When Indianapolis-based developer Simon Group in 2002 dropped out of its commitment to realize an entertainment complex on the city's underused 13-acre Penn's Landing site along the Delaware River, local groups like DAG and the University of Pennsylvania's Penn PRAXIS organized public forums and charrettes to address possible development. Yet Street moved ahead with his own plans to hire a developer. Later, it was revealed that the mayor, among others, was implicated in an F.B.I. corruption investigation, as was Penn's Landing Corporation, the quasi-government entity that runs Penn's Landing. Since then, the project has dropped from the public's consciousness and no one knows if it will reemerge.



Robert A.M. Stern's revitalized vision for the old Philadelphia Navy Yard.

Meanwhile, local design professionals' efforts to reform how the government builds (including a movement to update outdated zoning) cannot resolve the one issue that obstructs Philadelphia's emergence as an international metropolis: its provincial mentality, which often overlooks the city's role as the hub of the nation's sixth-largest region (which includes Southeastern Pennsylvania and Southern New Jersey). Philadelphia must work together with its surrounding communities to take advantage of its resources and establish a cohesive identity for the area, which it currently lacks. ■

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Making a mark by allowing the setting and climate to shape the architecture

Exhibitions

By Liane Lefaivre

Geoffrey Bawa: The Genius of the Place. *Curated by David Robson. At the Deutsches Architektur Museum, Frankfurt, Germany, through October 17.*







Natural ventilation cooled all of Bawa's buildings, including the Steel Corporation headquarters in Orawela (left), the Ena de Silva House in Colombo (below left), and the State Mortgage Bank in Colombo (below right).

Geoffrey Bawa's architecture was always a response to site. Living in a tropical paradise like Sri Lanka certainly put Bawa in touch with his surroundings. How could he go wrong with palm fronds swaying in the breeze, waves rolling onto endless white beaches, and a great tradition of classical Sinhalese Buddhist, Portuguese, Dutch, and English architecture enriching towns and countryside alike? But many others have gone wrong and continue to do so. Contemporary architecture in Sri Lanka (formerly Ceylon) can be as bad as anywhere else. What is surprising is how Bawa, who was born in Sri Lanka in 1919 and died there on May 27, 2003, succeeded in balancing Modern and traditional, global and regional.

The exhibition now at the Deutsches Architektur Museum in Frankfurt presents a complete and fascinating view of Bawa's world. Photographs, particularly those by Helene Binet and Christian Richters, capture Bawa's sense of place, as do five remarkable models built by the Delft-trained Dutch architect Robert Verrijt and his collaborators.

Curated by David Robson, who is also the author of an indispensable monograph on Bawa, this is a very personal exhibition. With the help of Channa Deswatte, who has inherited Bawa's practice, Robson has included original sculptures by Laki Senanayake and original batik banners by Ena de Silva that were part of real projects designed by Bawa. Senanayake and de Silva were close friends and collaborators of Bawa and helped comprise, along with Bawa, a true Sinhalese cultural renaissance in the wake of national independence in 1949. De Silva, who is now 83, made the journey to the opening, with many of Bawa's younger collaborators. It was a love-in that was keenly felt, as Bawa died of a stroke just over a year ago.

Originally trained as a lawyer at Cambridge in England, Bawa came to architecture as an adult in the 1950s, after buying a country house in Lunuganga, an hour outside of Colombo, Sri Lanka's capital. As he fixed up the house and its property, he became hooked on architecture. What grabbed him was the relationship between buildings and nature, the man-made and its surroundings. The house in Lunuganga became the love of his life.

Soon he dropped his law career, returned to England, and at age 35, enrolled at the Architectural Association in London. Robson points out that although Bawa came into contact with the Modernist legacy of Mies and Le Corbusier at

Liane Lefaivre is the coauthor, with Alexander Tzonis, of Tropical Architecture *(Wiley, 2000) and* Critical Regionalism *(Prestel, 2003).*

the AA, he developed a special affinity to Frank Lloyd Wright.

In some regards, Bawa was more Wrightian than even Wright. He is probably the only architect in the 20th century who had the luxury of designing buildings literally on-site, rather than in his office. Bawa's drawings, as presented in this exhibition, are awkward, like those of a child. For him, the real piece of paper on which to work was the ground itself. Construction workers were his pencils. While working on Ruhunu University (1980–88) on a beach on the Indian Ocean in Matara, he went so far as to have the laborers tear down one building they had just erected and rebuild it a short distance away.

We tend of think of Bawa above all as a supremely elegant designer, a fashioner of paradisiacal homes and hotels. It would, indeed, be hard to come by an architect who designed as many photogenic buildings as he. But what emerges from the exhibition and catalog is an understanding that elegance was just part of Bawa's significance. His first masterpiece was a house built for Ena de Silva in Colombo in 1960. De Silva hated colonial design as much as she did air-conditioning and demanded a house that would incorporate traditional vernacular Kandyan features, such as an enclosing perimeter wall for the whole compound, a pitched tile roof, open-sided rooms, verandas, courtyards, and a shrine room, along with modern spaces like an office for her husband, a studio for her son, and a wing for visitors. Bawa designed a plan that is an introspective pattern of interlocked pavilions and courtyards revolving around a large central court (or *meda midula*) and not one pane of glass to impede natural ventilation.

BAWA'S ARCHITECTURE WENT BEYOND THE PICTURESQUE AND CAME CLOSE TO A MUMFORDIAN CRITICAL TROPICALISM.

Bawa's architecture went beyond the picturesque, and came very close to a Mumfordian critical tropicalism. His buildings were all bioclimatically responsive, incorporating natural ventilation, even in his luxurious houses and hotels. This is as true of his first house at Lunuganga (started in 1953) as it is of his last project, the Pradeep Jayewardene House (completed in 1998).

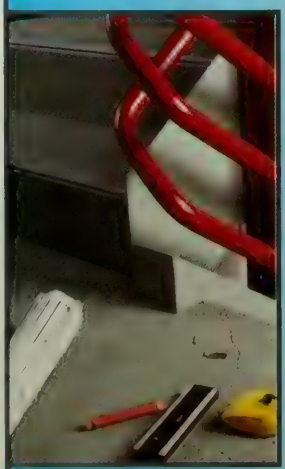
The real revelations in the exhibition are Bawa's office buildings, in particular his Steel Corporation Offices (1966–69) in Orawela, Sri Lanka. The project adopts a simple rectangular form but with an outward cantilevering section (inspired by temple buildings in Kerala, India, and Nepal) that provides protection from the overhead sun and monsoon rains while permitting the use of a breathing wall. The State Mortgage Bank in Colombo (1976–78) is even more ingenious—a 12-story building that Malaysian architect and author Ken Yeang has called the "best example of a bioclimatically responsive tall building to be found anywhere in the world." The building, like the site, is a lozenge-shaped wedge, which Bawa capped with a raised concrete canopy that helps protect the offices below from the direct impact of the sun and allows them to be naturally lit and ventilated. The main elevations face north and south in order to reduce solar gain and catch the main breezes. Windows are set back from deep spandrel panels designed as air-intake louvers.

The exhibition is an eye-opener. Western architects can learn a lot from Bawa, who showed how Modernism could adapt to a tropical climate. ■

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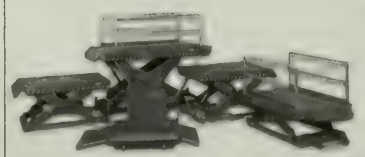


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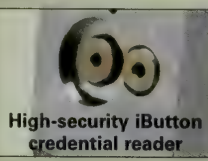


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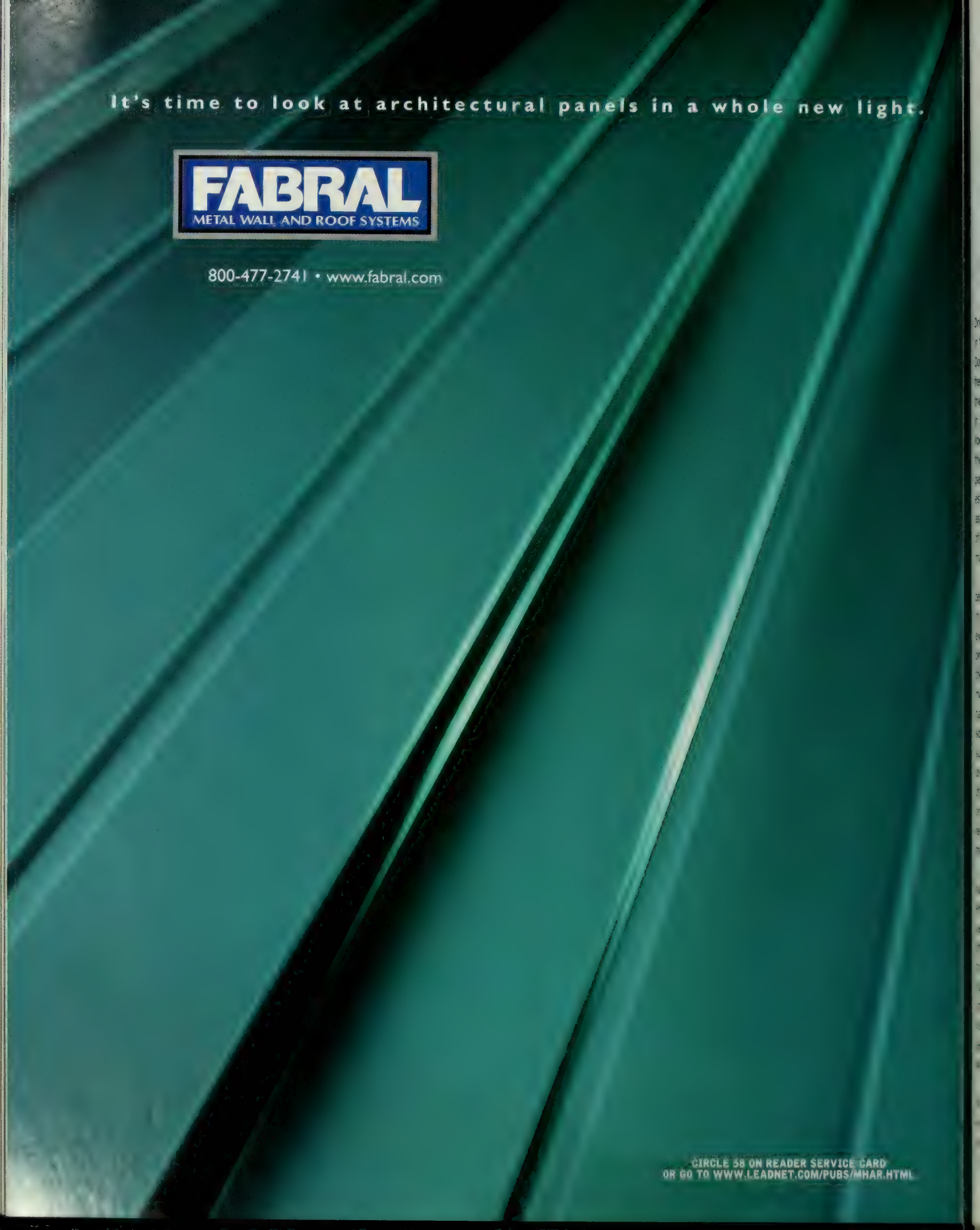
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Finding an open space for the exercise of democracy in New York's dense urban fabric

Critique

By Michael Sorkin

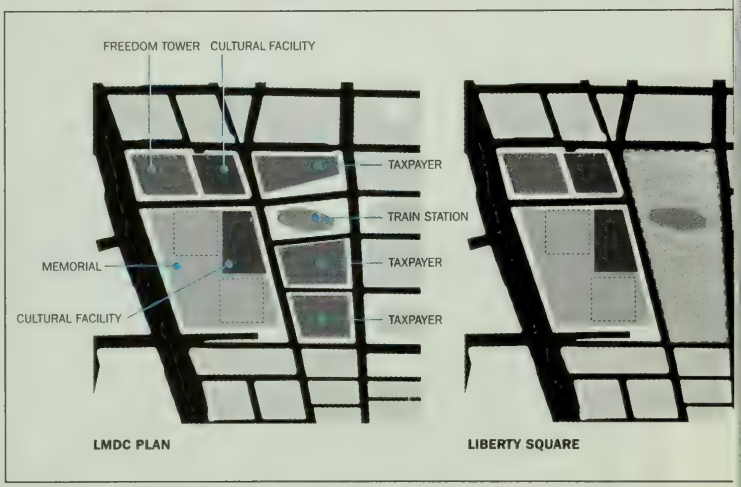
One of the basic rights enshrined in the First Amendment to the Constitution is that of "the people to freely assemble." Free assembly is the primary expression of democracy in space, the physical embodiment of liberty. This relationship far predates the American experience. Cities, in particular, have long been seen as especially conducive to freedom, as exemplified in the famous motto of the Hanseatic League: "City air makes you free."

The just city is one where citizens move unimpeded and gather in many different ways for self-expression. In modern times, social progress has been directly linked to the variety of rallies, demonstrations, marches, and insurrections that have had as their arena the streets and squares of the city. From women's suffrage to civil rights to union organizing to antiwar protests, the power of bodies together in space has been crucial to the defense of our rights. In real democracy, the streets belong to the people.

In city after city, certain places have become linked to these gatherings, institutionalized by repeated use. While the street is the bedrock of the popular "right to the city"—the conduit of association—it is only part of the necessary infrastructure of assembly that includes both privatized spaces such as bars, cafés, lecture halls, stadia, and stoops, as well as bigger public spaces: the parks, plazas, and town squares that remain fundamental to sound urbanism. Whether the Zocalo in Mexico City, the Mall in Washington, or Tiananmen Square in Beijing, these great sites are zones of focus, the common property of those dedicated to the struggle for free association. Indeed, the right of the public to gather in these places continues to be defended in blood.

Such matters have been much in the news in the current political season. The protest cage at the Democratic Convention in Boston—a prisonlike enclosure surrounded by razor wire—suggests a sinister elision of the war on terror with the control of popular assembly. The frustrations of those seeking to demonstrate against the Republicans in New York City have also provided ample evidence of the constraints on the popular right to make use of its own spaces. It also points up something else: the lack of enough suitable places for mass political rallies. Our main rallying spots in New York—whether Central Park, Times Square, or Fifth Avenue—all depend on the disruption of some other activity, whether traffic or recreation, and are thus subject to negotiation with the authorities, who, as recent events have so vividly shown, can be recalcitrant. Other venues—like Union Square, with its rich historic association with protest—are too small. Still others, including City Hall Park, have been fenced and "improved" to prevent gatherings.

The organizers of the largest New York demonstration, a group called United for Peace and Justice, originally applied for a permit to gather on the Great Lawn in Central Park. This was denied on the basis of the alleged fragility of the grass. The city offered as an alternative the West Side Highway, which the demonstrators refused, electing instead to march more visibly in the streets near Madison Square Garden. Such insubordinate assembly is part of the animating tension of democratic discourse and suggests that the character, location, and political valence of a space is crucial to its suitability for succinct public expression. Speech demands its audience.



Instead of erecting temporary "taxpayer" buildings at Ground Zero (above), the LMDC could create a venue for public gathering like Washington's Mall (below).



This problematic lack of suitable space comes at a critical moment as the nation rushes breakneck to restrict freedom of movement under the guise of fighting terror. While vigilance is necessary, these restrictions also represent a victory for the enemies of freedom, both at home and abroad. The attacks of 9/11—the initiating event in this cycle—were both an act of murder and an assault on our freedom to assemble. The World Trade Center replacement project, however, contains remarkably little nonprogrammed gathering

Michael Sorkin practices architecture in New York and is the director of the graduate urban design program at City College of New York.

space. The major component, of course, is a memorial that is parklike and solemn, not the spot for mass rallies. Remaining spaces of nominal assembly—such as the Wedge of Light—are residual, scarcely more than enlarged sidewalks. The proposed cultural facilities may be public, but they are decidedly not political or about large gatherings.

substitutes an iconography of freedom that slights its actual expression. For example, the "Freedom Tower" is simply an office building, doubtless one in which free access will be heavily circumscribed by security demands and sky-high rents. It limply signifies liberty via a vague asymmetry meant to evoke the Statue of Liberty, a devoluted icon

THE GROUND ZERO PLAN IS BUSINESS AS USUAL, VALIDATED AS APPROPRIATE BY A LAYING ON OF SACRAL ICONOGRAPHY.

Ironically, the WTC contained a larger plaza than anything currently proposed. It was, however, so inhospitable and its associated meanings so commercial that it never functioned as a place of assembly, simply as a windswept expanse to be crossed or avoided.

Instead of useful forms of assembly, the Ground Zero plan

for an icon, abstracted beyond recognition. The memorial is centered on the symbolism of the Trade Center footprints, which are to be water-filled and uncrossable. The Wedge of Light—should it actually be realized—calls for passive solemnity. The yet-to-be-conceived Museum of Freedom, however important it might become, will be a largely individual experience.

What has happened downtown is the creation of a plan that is essentially about business as usual, validated as appropriate by a laying on of sacral iconography. Everything receives its label—Freedom Tower, Wedge of Light, Park of Heroes, and so on—in order to create an aura of rhetorical piety to redeem activities that are anything but. If anything points up the fast-and-loose style of reverence of the rebuilders, it is the recent announcement by the Lower Manhattan Development Corporation and Larry Silverstein that—given the flat office market and the failure to obtain a double payout from Swiss Re—they are likely to build "taxpayers" on the eastern portion of the site, an area (on either side of Santiago Calatrava's fine transit station) that amounts to more than three city blocks. These proposed low-rise commercial buildings would be intended as placeholders for future office towers, which might not be constructed for decades. If this goes ahead, a shopping center would line the rebuilt Greenwich Street, facing the memorial and the two cultural buildings the LMDC is developing.

Clearly, this is not the highest-and-best use for New York's most significant urban project. However, it does present a remarkable opportunity. These blocks might become the great public plaza that the city lacks. Surrounded by a strong edge of buildings, highly accessible, and located on a site of remarkable resonance, the space might become not simply a symbol but the scene of liberty in action, a zone of free assembly and free speech. It is also in the heart of things, at the center of our institutions of governance and commerce, an apt and visible site for public expression. And instead of managing remembrance through a series of themed activities that offer little opportunity for spontaneity or collectivity, it would truly belong to the people, an embodiment of our nation's greatest ethical and political power.

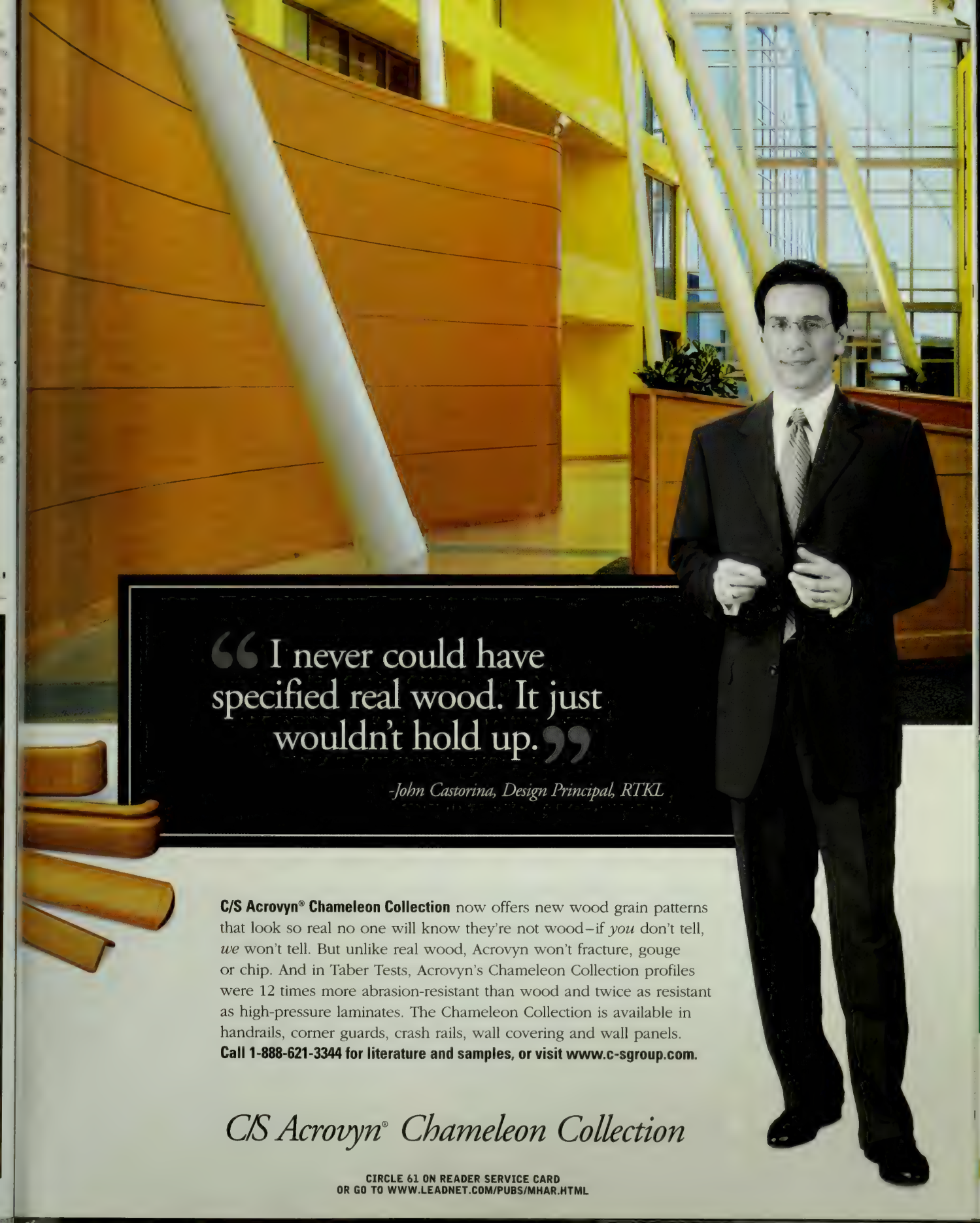
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Cross-border explorations: Two thinkers who span disciplines and a place on the Silk Road

Books

Eisenman Inside Out, Selected Writings, 1963–1988, *by Peter Eisenman. New Haven: Yale University Press, 2004, 264 pages, $30.*



Having reached his early 70s, Peter Eisenman—architect, theorist, professor, publisher, editor, historian, administrator, impresario—has lately been doing a lot of building and publishing. His monumental and detailed analysis of two buildings by Giuseppe Terragni came out last year, and he has now delivered a collection of early essays. Mature architects will remember many of the articles in this volume, and it is rewarding to have them back in print and in one place. As we see from the bibliography at the back of the book, these essays were culled from a much longer list.

In the introduction, Eisenman describes his lifelong quest to understand what he calls the "interiority" of architecture: that elusive spirit of architecture's core of being, not what he calls a "mere" formal, compositional, structural, or functional quality, but something more basic and inchoate. To this end, he has periodically enlisted assistance from other disciplines, most noticeably semiotics, linguistics, and deconstructionism.

In the first essay, which was written in 1963, Eisenman—still under the influence of his Cambridge University mentor, Colin Rowe—attempted to supersede contemporary norms of criticism by arguing that functional expression has both an instrumental and a symbolic quality and that pure functionalism is, therefore, impossible. It is a convincing piece. The essay predates the influences of (among others) Christian Norberg-Schulz, Noam Chomsky, semiotics, and Jacques Derrida's deconstructionism.

The book then skips to the 1970s, and we pick up Eisenman's interest in architecture as it relates to linguistic expression. By then he was trying to make buildings that were "meaning-less," architecture with neither denotative nor connotative significance, possessing only what he later would call *interiority*. An early essay on this aspect of architectural theory, "Cardboard Architecture" (1971), describes the design process and desired outcome of his first built works, Houses I and II. Eisenman once again maintains that he has surpassed previous theories to formulate an unprecedented way of both looking at and making architecture. But just how revolutionary are his buildings and theories? Based on the essays in this volume, it is still an open question. Take this excerpt from "Cardboard Architecture" concerning House I: "All of the apparent structural apparatus—the exposed beams, the freestanding columns—are in fact nonstructural. When this is understood, a first step has been taken to unload, albeit in a very primitive way, their structural meaning. While the apparent physical fact is the same whether they are load bearing or not, their meaning has changed because they are in fact not load bearing, and thus the intention implied in their use in a particular location must now be considered in a different way."

The same could be said about Filippo Brunelleschi's 15th-century church of San Lorenzo in Florence. In San Lorenzo, we see an array of members that look structural but aren't, a grid of abstract planes and lines that define a three-dimensional matrix and the conceptual index to an ideology. Many architects and scholars have noted this.

But unlike at San Lorenzo, where pilasters and moldings on the walls are easily understood as representations of structure, the "nonstructural structure" of House I is freestanding. Until Eisenman tells us that what looks structural is not structure, we have no way of knowing it. This is indeed one of his stated intentions; it makes his ostensible structure opaque as nonstructure. This is the obverse of the truss that supports what looks like a dome at the U.S. Capitol. While the architect of the Capitol most certainly wanted us to believe it is a dome, and kept the information from us (save those privy to a section through the dome), Eisenman gives us the "knowing wink" via his essay. As footnotes for his buildings, these essays are a bit like the notes provided by T.S. Eliot for poems such as *The Wasteland*. They promote a richer understanding of the poem, but without the footnotes we may miss some of Eliot's deeper meanings and allusions. Without Eisenman's footnotes, the meaning is merely reversed, but we don't really know if that means it has been deepened. Does this matter? Apparently not to him.

In essays of the 1980s, he elaborates and refines his theories, but these writings, it seems to me, do not support his claims to unparalleled theoretical innovation. Without these recurrent claims, the articles would be more enjoyable.

Many architects tend to dismiss this sort of writing out of hand, without giving it a thorough reading. This is a mistake. Eisenman always questions the status quo, always presents potentially plausible interpretations of architecture, and at times shows brilliance. The essays are interesting, his writings about other architects' works are perceptive, and much of the descriptive material on his own work is worthwhile. I have in the past found his

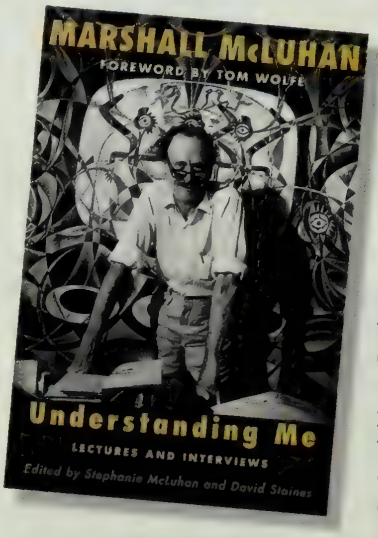
articles on the Smithsons, Michael Graves, John Hejduk, and James Stirling first-rate and engaging. An essay on Philip Johnson, overtly supportive but subtly (indeed, covertly) critical, is worth the price of the book. I may not agree with all of Eisenman's ideas, but I always enjoy reading them.

Will the next volume of Eisenman's essays shed more light on interiority, and give us a truly transparent view of it? Architects are notoriously bad at explaining their own works. Most of them (except maybe Rem Koolhaas and Leon Krier) should leave that to others. *Thomas Schumacher*

Understanding Me: Lectures and Interviews, *by Marshall McLuhan, Stephanie McLuhan, David Staines, and Tom Wolfe. Cambridge: MIT Press, 2003, 317 pages, $28.*

Marshall McLuhan, the communications theorist who focused on the media's psychic and social consequences, invented, among many other things, the idea of the global village. In *War and Peace in the Global Village* (1968), he presciently wrote that the global village could easily produce bloodbaths. His 1967 book, *The Medium Is the Message*, elucidated what is now a cliché. *Understanding Me* is a pun on his *Understanding Media: The Extensions of Man* (1964), the book that first brought McLuhan to international attention.

In *Understanding Me*, McLuhan, ever coining terms and turning phrases, writes, "The medium is the massage, not the message … it really takes hold and massages the population in a savage way." Ironically, it was the media that turned McLuhan into a cultural icon. A San Francisco advertising man, Howard Gossage, took it upon himself to introduce the Canadian theorist to the U.S. press and advertising industry, at his own expense. By the mid-1960s, major magazines and newspapers were comparing McLuhan's insights to those of Darwin and Freud. But by the time of McLuhan's death in 1980, his critics, chiefly New York intellectuals, had dismissed him as unserious and old hat. He had become best known for one-liner aphorisms, many of which turned common sense on its head. "All forms of violence are quests for identity," he wrote, and "Charisma means looking like a lot of other people." If the last seems especially counterintuitive, think Bush and Kerry. Aristocratic scions both, each is trying to prove he has charisma by denying he is exceptional. Bush has gone so far as to turn himself into a good old boy.



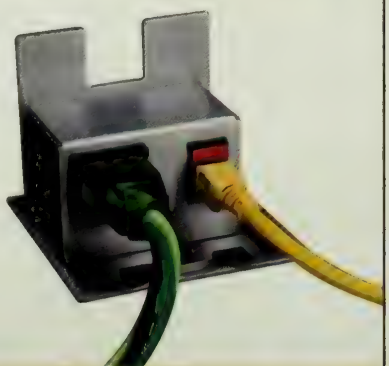
When the Internet burst onto the scene in the '90s, it seemed to fulfill prophesies McLuhan had made 30 years earlier. Again he was lionized, this time by turn-of-the-21st-century techies, for whom he became a sort of patron saint. *Understanding Media* had predicted the type of "interactive" communication that the Internet made possible, but what really grabbed young techies was McLuhan's belief that the new media were spreading a seamless web over the earth and becoming an extension of

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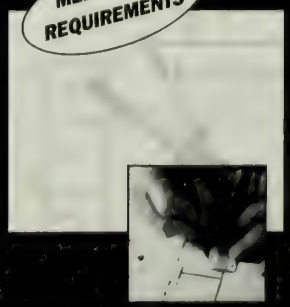
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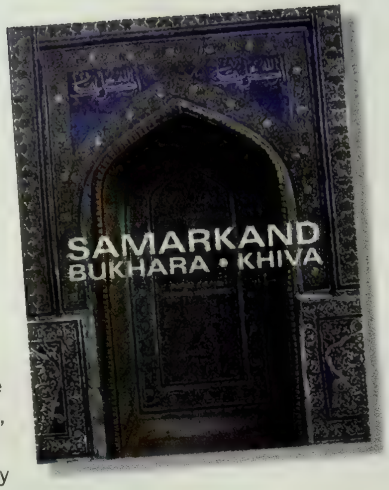
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humankind, capable of altering the human mind and history itself. He came to this conclusion without knowledge of galvanic skin responses to technology, terminal node controllers, or the Apple Newton. *Wired* magazine, the most prominent of the dot-com journals, ran his picture near the masthead in every issue.

In the foreword to *Understanding Me*, Tom Wolfe, the pop-culture critic and author, writes, "I can't think of another figure who so dominated an entire field of study in the second half of the 20th century." The book is a transcription of two dozen tapes of McLuhan's television interviews and lectures, spanning the years 1959–79. They were collected by McLuhan's daughter Stephanie, a New York television producer. She correctly notes that the lectures comprise a biography or autobiography "enabling you to read McLuhan in the original, where you will find a more accessible, even unmediated, encounter than is possible through his books."

Andrea Oppenheimer Dean



Samarkand, Bukhara, Khiva, *photographs by Gérard Degeorge, text by Pierre Chuvin. Paris: Editions Flammarion, 2003, 232 pages, $60.*

Where can I find that Pakistani guy with the drums and the howling chorus? That Puerto Rican dance band my friend played for me? In most outlets, you head for "World Music," where the sacred and profane of other continents rub elbows, often quite incongruously.

Samarkand, Bukhara, Khiva is the kind of book that's likely to fall into architecture's "World Music" bin. The work of two Frenchmen, a photographer and a writer, who spent five years in the region of three famous oasis towns along Central Asia's Silk Road, it documents their monuments—mosques, shrines, and mausoleums—and a few of the old houses.

The text spends more time describing what the photos clearly show than explaining how and why the buildings got that way. As a visual record of these remarkable, and for us pretty inaccessible, towns, the book does a good job. The photos are striking, and the buildings are often beautiful in form and ornamentation.

The text provides a running commentary on the history of each town and, in particular, of the people with whom its monuments are associated—tyrants, sheikhs, imams, and the occasional wet-nurse. This history is heavily lifted from other sources, all properly attributed. Missing, though, are the pleasures of a first-person account, which is surprising considering how long the authors stayed in the area.

That these stopovers along the Silk Road revealed architecture of this quality speaks to the importance of these communities as centers of philosophy and culture—oases and crossroads in another sense. They also figure heavily in Sufism, Islam's mystical wing. It's frustrating, then, to not find more here about what we're seeing. The cathedrals of Europe also had their patrons, but knowing their personal histories is not why we buy books about them. *John Parman*

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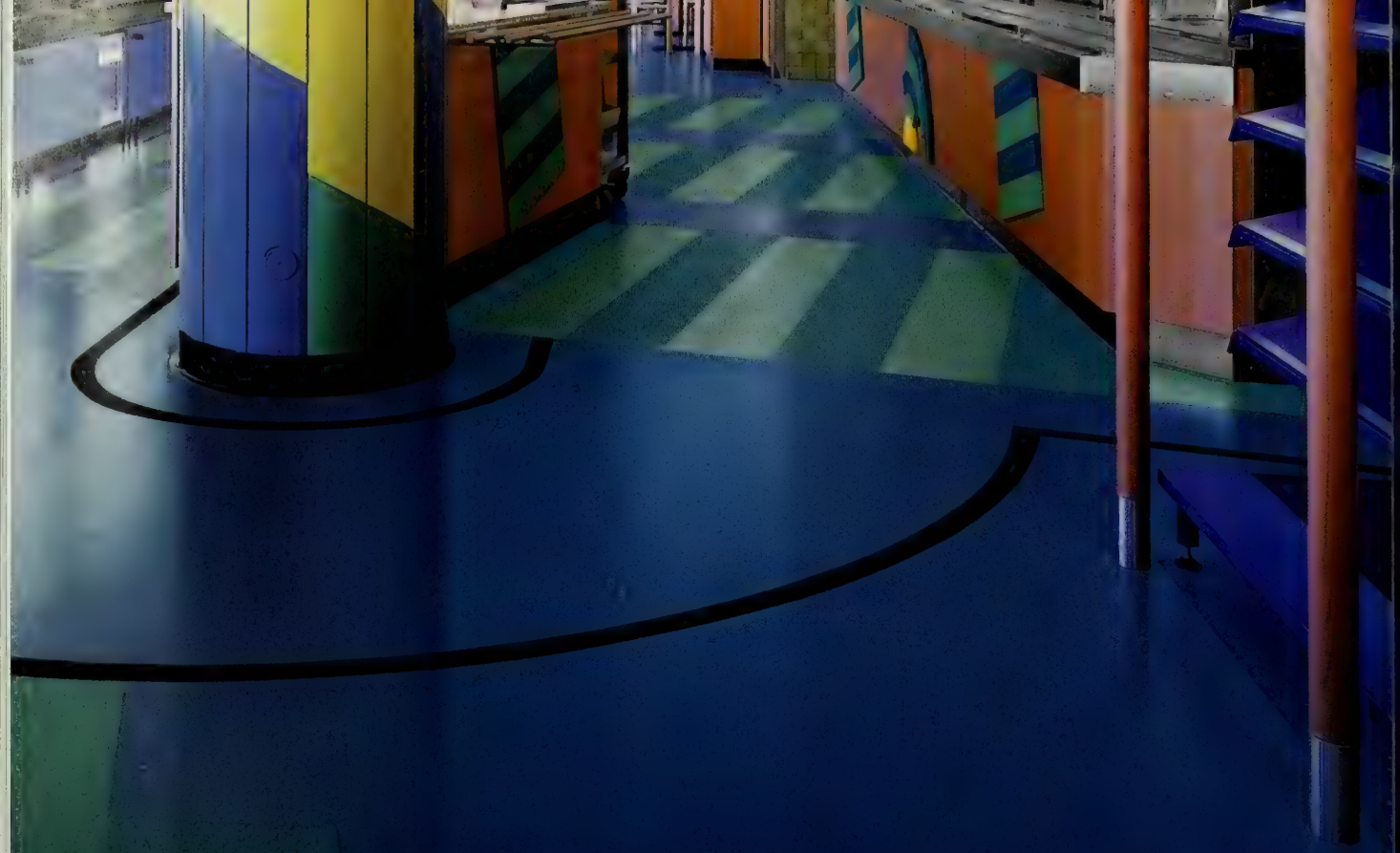
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Snapshot



By Robert Such

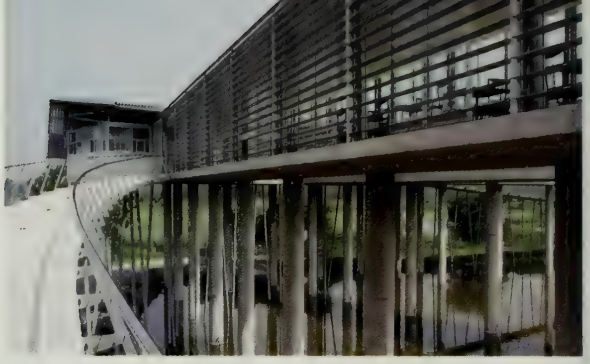
An improbable cafeteria provides lunchtime escape

Nicknamed for the James Bond film *Octopussy* and for its resemblance in plan to the shape of a spider, the Octospider workers' cafeteria stands 26 feet above a lake on an expanding campus of factories, warehouses, and workers' housing on the outskirts of Ratchaburi, west of Bangkok.

The Ian Fleming story that was immortalized by Roger Moore in 1983 "reflects the essence of the building," says Oliviero Godi, who along with Dorit Mizrahi is a principal of Exposure Architects, the Italian practice behind the cafeteria design. Like *Octopussy*, says Godi, Octospider is "an improbable [creative work] sprung out of a fervent imagination." Indeed, the building brings to mind the fantastic headquarters of some of 007's arch rivals.

Designed for the Satin Textiles Company, the cafeteria, which can serve some 300 workers, embodies the ideals of Satin Textile managing director Schle Wood, who, says Godi, "insisted on providing his employees with a better working environment as a fundamental part of his vision for a modern industrial operation."

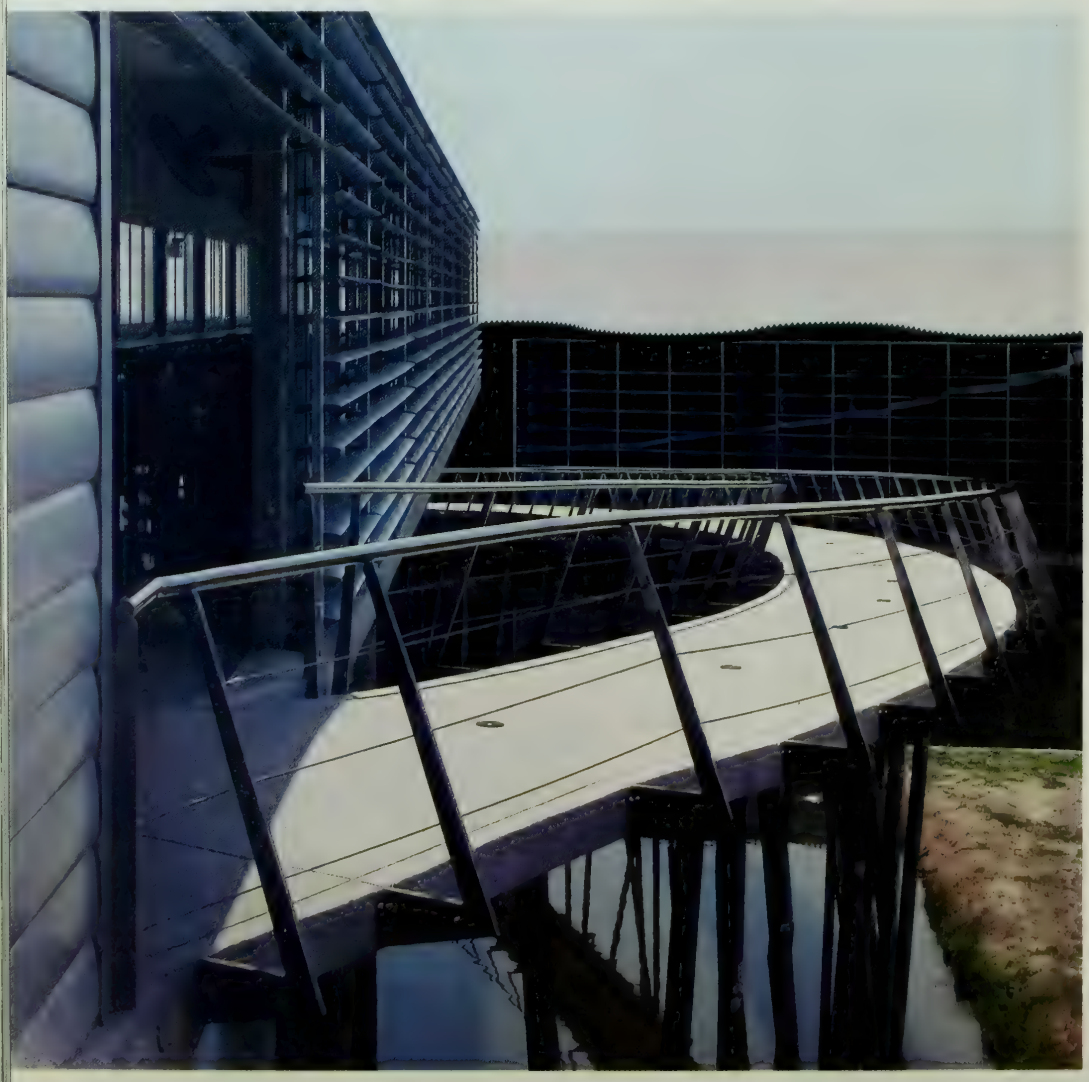




Supported by concrete pillars, three pierlike dining areas extend out over the lake. Access to the cafeteria and the kitchen is provided by a shallow ramp that arcs across the water and then flattens out as it passes through the building. The sense of lightness found in traditional rural architecture—canopied structures that provide shade from the beating sun and shelter from heavy rains—influenced Octospider's architecture, which also incorporates louvered walls to allow cross ventilation. And the slanted piles that support the crescent-shaped walkway mimic bamboo, enabling the ramp to blend in with its surroundings.

The extended walkway and elevated structure were conceived "to provide workers with a unique environment, where they do not feel as though they are inside the factory for the brief time they spend eating," explains Godi. And as diners enjoy this privileged vantage point, rising above the reality of the factory below and looking out across the landscape, they are also being observed by the workers on the ground.

Exposure Architects' building demonstrates the firm's sensitivity to Thai architecture and landscape. At the same time, it serves as a stagelike venue where taking time out to eat provides escape from the daily work routine and becomes an enjoyable actor-spectator experience. ■



A gently sloping ramp arcs over the lake and transports factory workers up to the Octospider cafeteria where, soaring above the fray, they find a welcome respite in the middle of a long day.

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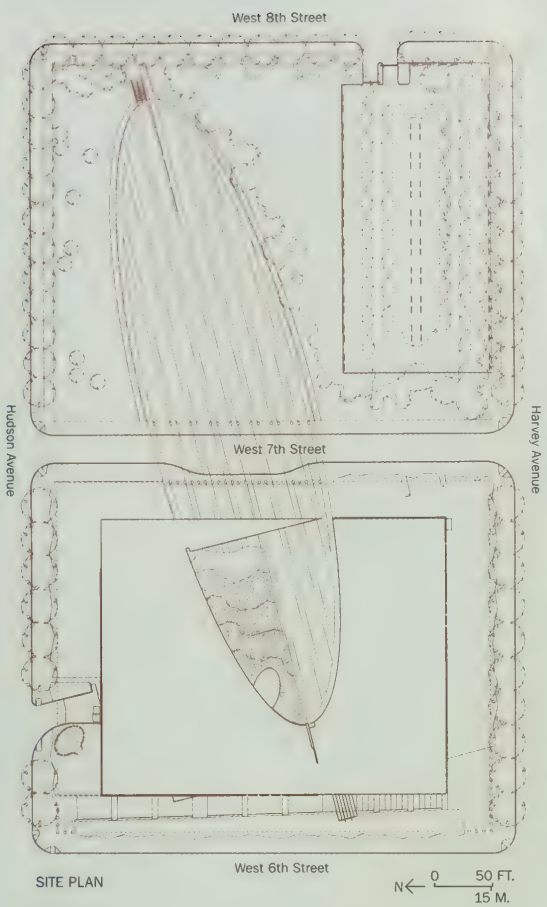
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klahoma City's new ederal Building ombines security nd openness a superior way



A view of the elliptically shaped courtyard in front of the new Oklahoma City Federal Building.



SITE PLAN

By Jane C. Loeffler

The Oklahoma City Federal Building makes a strong and welcome statement of federal purpose in a place that will always figure in our collective memory. It replaces the nine-story Alfred P. Murrah Federal Building that collapsed in a terrorist bombing on April 19, 1995. Aimed at the federal government, that attack killed 168 people and was the worst such incident on U.S. soil when it occurred. We are just beginning to see the impact of that blast and that of the more recent 9/11 attacks on the civic landscape. In that context, the federal building is significant as a major public project that manages to combine necessary security with design excellence.

Given the fear that gripped federal workers in the aftermath of the bombing, and the realization that the unhardened design of the previous building had left occupants at risk, security imperatives easily could have overwhelmed the design of any replacement building. They did not because the U.S. General Services Administration (GSA), which oversees all federal-government construction projects, had determined that the new building would not be a memorial but a fully functioning state-of-the-art building. (A poignant memorial, designed by Hans and Torrey Butzer and Sven Berg [ARCHITECTURAL RECORD,

Jane C. Loeffler is an architectural historian in Washington, D.C., who writes frequently on embassy design and public policy.





The building occupies the southern end of the site (this page, above), nearest downtown. Artist Brad Goldberg's boulder-strewn water sculpture takes up one half of the courtyard (opposite, bottom). A public park is located on the block to the north of the building (opposite, top).

July 2000, page 28], was dedicated on April 19, 2000, on the site where the Murrah Building fell.) When the GSA awarded the high-profile commission to Ross Barney + Jankowski Architects of Chicago through its Design Excellence Program, the intent was to make the building forward-looking, but not fortresslike.

When the GSA's chief architect Ed Feiner describes the new building as "a commitment building," he's referring to the fact that the GSA could have permanently moved workers to another area, or leased space somewhere, rather than replacing Murrah with a new government-owned building here. In the aftermath of the bombing, Ron Norick, who was then Oklahoma City's mayor, headed to Washington to meet with President Clinton at the White House. There, he stressed that "it was vital to keep the federal presence in the downtown area."

A replacement for the Murrah Building was deemed essential as a way of jump-starting redevelopment in the area of the blast, and a means to keep scores of federal jobs in the city, argued Norick. "I knew if they didn't build the building, they'd be moving many or most of the jobs to Dallas or Kansas City or someplace else," he declared. Norick's mayoral successor Kirk Humphreys reiterated this, adding, "The federal government had no clear identity without a building." In a remarkable display of bipartisan unity, led by staunch Republicans, who ironically represent a constituency that harbors strong antigovernment sentiments, Oklahoma's elected officials backed a new federal building as a much-needed symbol.

Any new workplace really had to lure back reluctant workers after the bombing. According to Norick, tenants who survived the attack "just wanted to get out of town." HUD workers, for example, who relocated to an old shopping center, liked it there and wanted to stay in the convenient, inconspicuous structure, which had free parking. To win back the confidence of former tenants, GSA decided to exclude law-enforcement agencies from the new building. Coupled with the evident security engineered into the structure, these decisions convinced most (if not all) tenants to return to the city-center site.

According to Leonard C. Murphy, who supervised the $40 million project for GSA, "We knew we didn't want to build a bunker, and also that we wanted a building that invited the public." For architect Carol Ross Barney, FAIA, this challenge meant finding a design solution that would look, feel, and be secure, but one that would also welcome visitors and encourage engagement with the larger community. Because former Murrah tenants did not want anything tall, she started out thinking in terms of a campuslike arrangement of low structures. Unfortunately, as one block of the planned-upon three-block parcel was unavailable, she decided on a single, three-story structure paired with a public park on two blocks. Instead of pushing the building to the far end of the site, where it would have seemed more imposing and remote, she pulled it as close as possible to the south end, near downtown. That means it is clearly visible from the memorial, but it does not upstage it in any way.

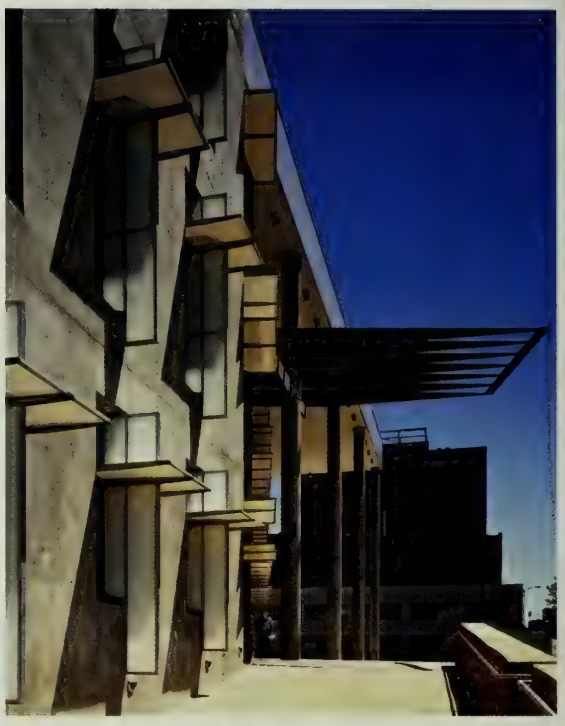
A NEW BUILDING WAS ESSENTIAL TO JUMP-STARTING REDEVELOPMENT IN THE BLAST AREA.

It also means that the memorial, a shallow reflecting pool and a field of 168 empty chairs, is visible from the building—a potentially uncomfortable reminder to federal

workers. That prompted the installation of floor-to-ceiling window coverings in all of the offices. But workers say this concern turned out to be unfounded, as no one at the new building is closing the blinds to block the view of the memorial. Even in the offices and conference rooms occupied by HUD, the agency most affected by the Murrah attack, workers prefer to keep the shades open—evidence, they say, of their comfort level in the new building.

To augment openness, Ross Barney gave the 181,000-square-foot, U-shaped building two equally accessible "fronts," each with its own personality. Facing south to the downtown (and also the memorial), the building takes a formal stance. A soaring colonnade and concrete walls punched with windows line up with city streets—homage to the grid on which Oklahoma City was laid out in the land rush of 1889. Facing north, however, to a less densely settled and newer part of town that promises to see rapid development over the next decade, a visual drama unfolds. Here the building opens up completely to reveal a stunning courtyard featuring a glass curtain wall that partially encircles an installation of cascading red granite boulders. The rocks, gathered from a bison farm in the hills of western Oklahoma, were selected and arranged by landscape sculptor Brad Goldberg as part of GSA's Art in Architecture Program. Coming upon the courtyard is like is opening a jewel box and finding an unexpected gem.

Light shelves and sunshades protect windows on the south elevation (right). Lobby walls are covered with a veneer of local creek stone (below).



SITE FEATURES HERE EXPRESS ROSS BARNEY'S BELIEF THAT "BUILDINGS ARE ROOTED IN THEIR PLACE."



Beyond the courtyard is a park planted with trees on one side to evoke the Oklahoma woodlands and with native grasses and wildflowers on the other to evoke the prairie. A surface lot that keeps unscreened parked cars at least 100 feet from the building—a security requirement—lies beyond the park, in the northeast corner of the site. Ross Barney inscribed an elongated ellipse in the landscape, a dramatic device that ties together the two-block site. She extended its geometry into the building, integrating the park seamlessly with the architecture. From the air, the ellipse, with its alternating stripes of crushed red stone and green grass, makes the new landmark easy to spot. Others can debate whether or not that is a good idea, but for a visitor approaching on foot, the stripes simply lead the eye to the most striking portion of the building.

Describing her fascination with everything from the texture of local rocks (incorporated into a remarkable wall veneer that resembles an archaeological excavation) to the elliptical shape of ceremonial grounds used by Native American Indians (the inspiration for the ellipse), Ross Barney emphasizes her belief that "buildings are rooted in their place." Stuart O. Dawson of Sasaki Associates; artist Douglas Hollis's 46 star-shaped, stainless-steel benches symbolizing Oklahoma's entry into the Union as its 46th state; and artist Goldberg's sculpture, whose boulders seem to have arrived self-propelled from the Washita Mountains, aid her ably in connecting the architecture to its locale.

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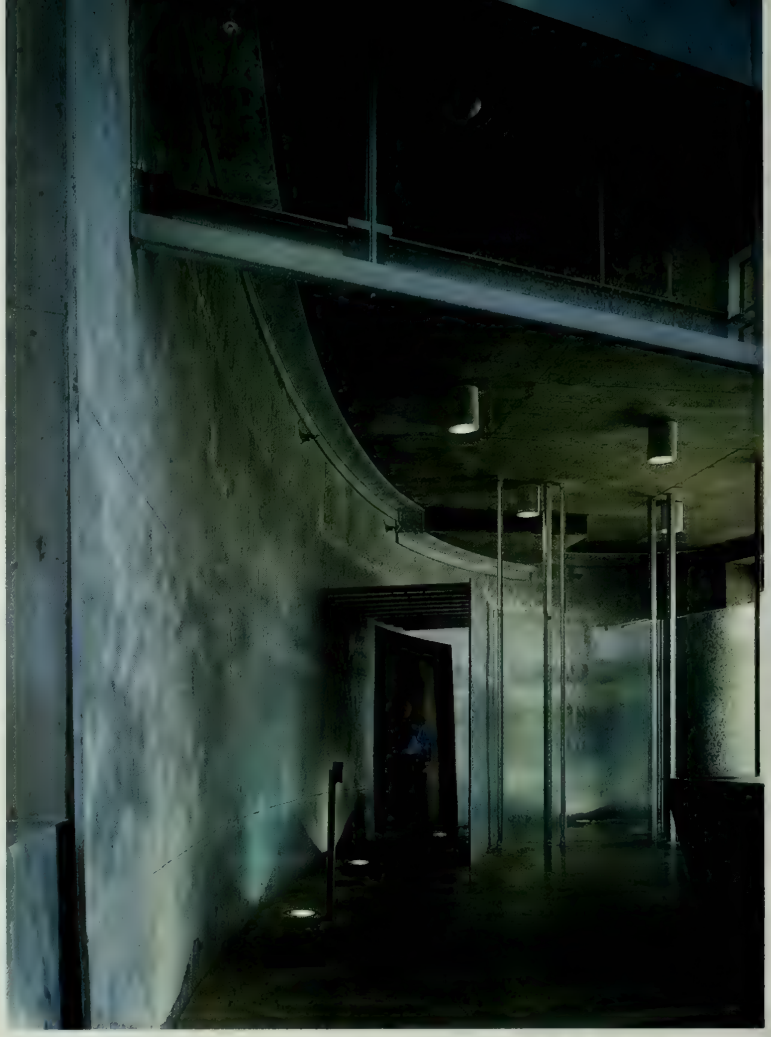
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What also ties the site together are the steel bollards, some illuminated at night, that ring the perimeter and separate the building from vehicular traffic. Compared to the massive Jersey barriers that surround public buildings elsewhere, these are not intrusive, and most are likely to be at least partially obscured by the native grasses that have yet to establish themselves on the site. (The landscape architect, though, says the intent was never to hide them.) Video cameras mounted on poles near the perimeter provide the building's first line of defense.

Blast-resistant design by Weidlinger Associates and a structural system engineered by The Benham Companies of Oklahoma City provide a second line of defense. Given GSA's stringent force-protection requirements, Jim Reynolds, who served as project architect for Benham, is understandably proud of "the concrete two-way slabs that permit the high ceilings and open, unobstructed interiors"; the "wall columns" that permit the large windows; and the stone veneer, devised in collaboration with Ross Barney so that individual stones will not become projectiles in the event of an explosion. To minimize further risk of injury in the event of a blast, the architects selected panels of insulated laminated glass bonded to steel frames with structural silicone. The window units are manufactured by the same company that fabricated replacement windows for the Pentagon.

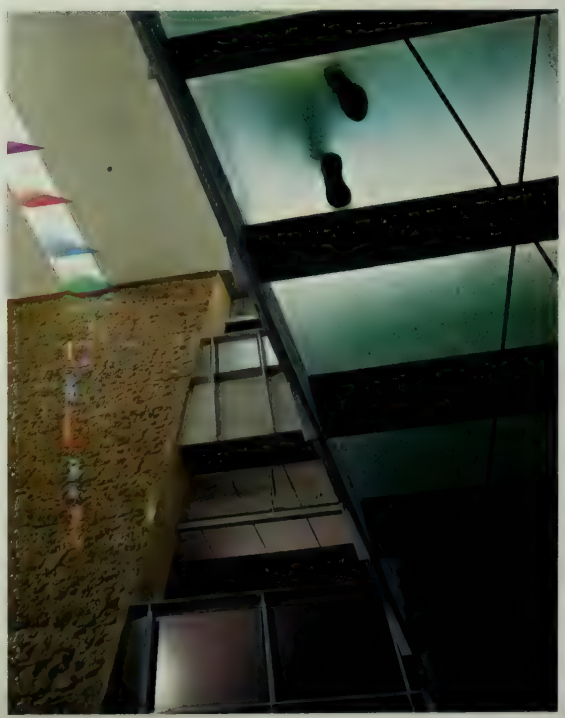
Undoubtedly, one of the most welcoming features of the building is the entry arrangement that allows people to walk into the small lobby atrium from either the north or south "front" entrance without having to pass through security. By having both entrances feed into one lobby, Ross Barney allowed the same guards to monitor both doors. And she created an inviting lobby open to the public, where colored light pours through a skylight of dichroic glass, then through glass bridges connecting the floors above. Security screening occurs in adjacent areas where the walls are made of polished steel for strength, and to set them apart as transition zones between the lobby and offices beyond.



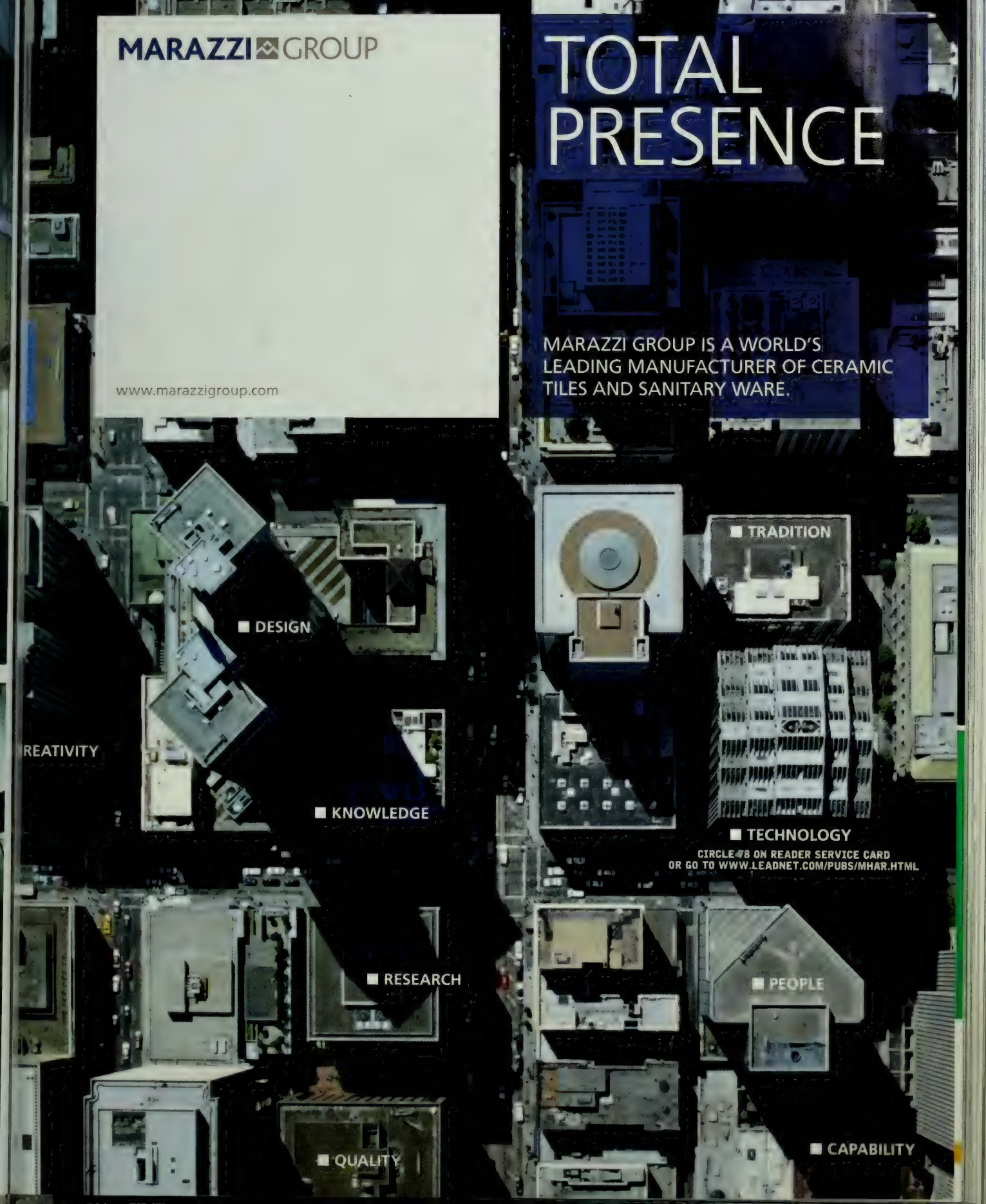
PEOPLE CAN ENTER THE BUILDING'S LOBBY WITHOUT HAVING FIRST TO PASS THROUGH SECURITY GATES.

A daylighting system will make interior electric lights unnecessary much of the time. Features include sunshades or shelves (made of fabric and framed in aluminum) that allow the building to screen out sun and glare and "harvest daylight," as Ross Barney puts it. Heat and air-conditioned air are distributed using an underfloor distribution system that enables planning flexibility.

Unlike John Johansen's Mummers Theater (1970), an Oklahoma City landmark that always pleased architectural cognoscenti elsewhere but never won local acclaim, the new federal building is already recognized as an asset. Downtown OKC Inc. lists it along with the other urban redevelopment projects, including the popular Bricktown, that have totally transformed the southwest capital since the early 1990s—a sign that a grateful city has already embraced it as part of its future. ■



Visitors can actually enter the building's small lobby from either end before going through a single security area (top). Laminated-glass footbridges (right) allow people on upper floors to pass from one side of the building to the other.


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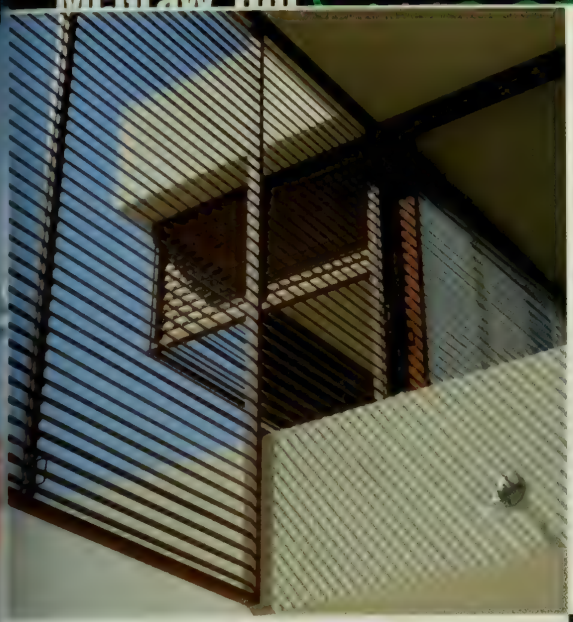
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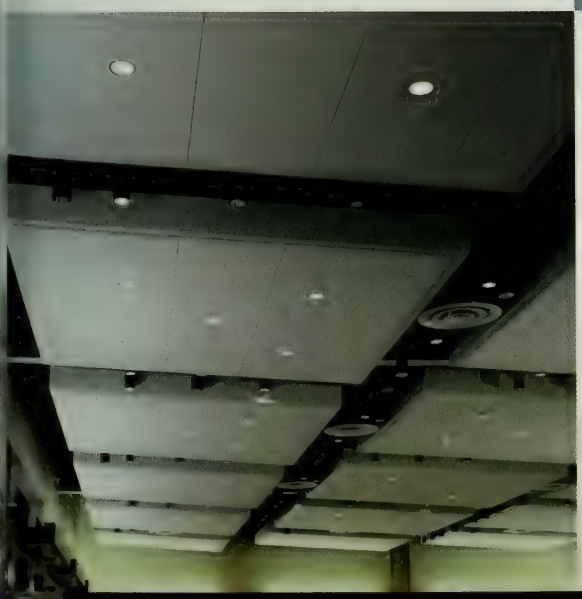
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Below: Seagate Technologies, Colorado Springs, CO
Architect: Architects Interior Design
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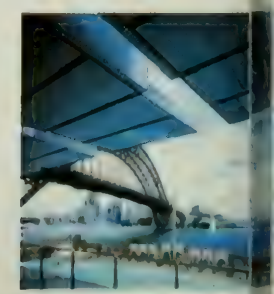
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Above: Credit Lyonnais Tower, Lille, France
Architect: Christian de Portzamparc
Product: Spring-tempered horizontal aluminum blinds

Left: Office Building, Delft, the Netherlands
Architect: XX Architects
Product: Silhouette FR shadings in a range of colors

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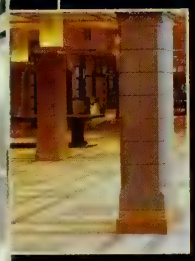
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Left: Skirball Cultural Center, Los Angeles, CA
Architect: Moshe Safdie and Associates
Product: Nysan automated skylight shades

Below: The Getty Center, Los Angeles, CA
Architect: Richard Meier & Partners
Product: Nysan motorized roller blinds

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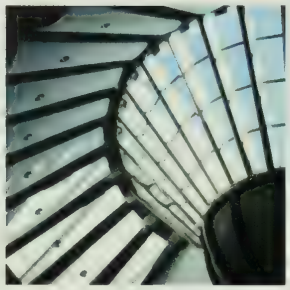
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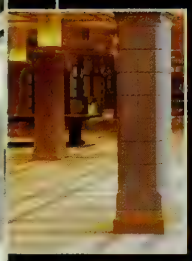
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Ricardo Cumming Metro Station, Santiago, Chile
t: Gubbins Architects and Burmeister Consultants
: Luxalon curved aluminum panels

ympic Swimming Pool, North Sydney, Australia
t: Hassell
: Luxalon plank metal ceiling

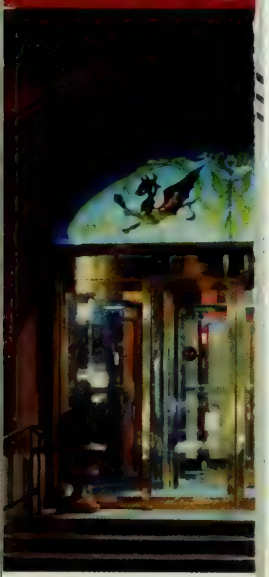
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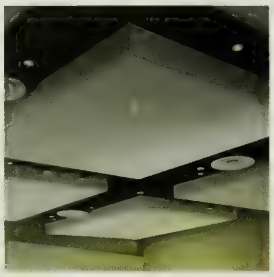
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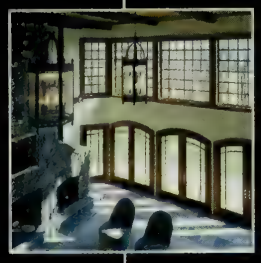
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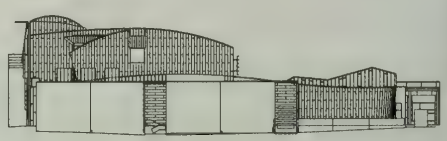
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Museum Quartet

Four designs bring a new voice to the debate over what a museum should be

By Robert Ivy

Given the large number of pages devoted to contemporary museum design by the architectural press, you might wonder why ARCHITECTURAL RECORD is devoting more attention to the subject. Haven't we seen enough? Yet museums continue to proliferate across the international landscape, leading to the conclusion that, post-Bilbao, every municipality seems to want a smash.

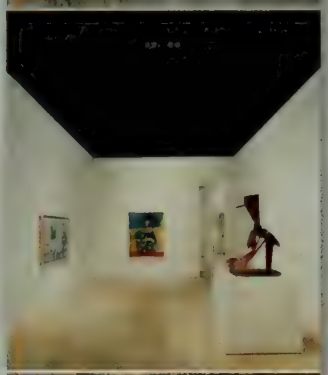
Once clearly designated by function, primarily as repositories of discrete objects, museums are no longer constrained by familiar labels, allowing them to continually cross the line between traditional disciplines: The art museum doubles as civic emblem and as front porch, and the museum of history serves as interpretive center. Museums carry unstated semiotic messages, whether of politics or ethnic heritage. These formerly all-public institutions now actively court private partnerships. Purists may fume at a perceived weakening of standards, while museum directors eagerly seek new ways to attract the public, and mayors dream of potent new urban symbols.

Today, the museum-world debate centers on the institution's posture toward contents: Should the physical envelope provide a passive background for the ideas or artwork within, or should a museum (and its architect) emote or speak in its own architectural language? Directors, patrons, and architectural professionals are continually experimenting with a range of expressions.

Like other human institutions, museums are evolving. In a recent conversation with RECORD, the architect Daniel Libeskind asserted that museums are growing toward an important, as-yet-undefined new purpose, engaging a broader public and finding a new voice. The projects that follow demonstrate the ability of museums to reinvigorate existing structures and the surrounding landscape with new meaning. We will be covering other major examples in the months ahead, in a trend that continues to surprise.









1. **Brooklyn Museum**
 Polshek Partnership
2. **Aomori Contemporary Art Center**
 Tadao Ando Architect
3. **Museo Picasso Malaga**
 Gluckman Mayner
4. **Danish Jewish Museum**
 Studio Daniel Libeskind

PHOTOGRAPHY: © RICHARD BARNES (1); MITSUO MATSUOKA (2); DAVID HEALD (3); BITTER BREDT (4)

A new entrance by the Polshek Partnership opens the treasures of the BROOKLYN MUSEUM to a new generation of viewers



By James S. Russell, AIA

For most museums, a new entrance is no big deal. But the 5,000-square-foot crystal arc that's just been added to the Brooklyn Museum is much more than a doorway: "This openness and transparency is about getting people to feel that they belong," said Arnold Lehman, the museum's director, in an interview.

Not long after he joined the museum seven years ago, he brought his wife, who took one look at the building's magnificent but fortresslike facade and declared it "like a ministry on a ring road in Moscow." The towering, 260-foot-long granite and limestone facade represented the apogee of the borough's gilded-age urban ambition (page 119). Over time, Brooklyn grew more industrial, more ethnically diverse, then poorer. Many of the great collectors moved on; visitors felt dwarfed in the vast, echoing spaces.

Lehman's ambition is to reflect the borough's vibrancy within these massive walls. He is trying to draw in its staggeringly diverse communities, especially those brimming with people who have never considered museumgoing a habit worth developing. "For generations, this building has signaled that it is about a specific group of people who know how to navigate it, who know how to interpret things."

Marrying the 19th century with the 21st

For James Stewart Polshek, the creation of an inviting entrance went beyond rectifying the crude removal, in 1934, of the museum's original entrance stair. It meant that the massive facade had to open up, admit light, and make passersby curious about what lies within. "And yet I couldn't ignore or make a mockery of what was there," he said. "We had to match in a 21st-century way the 19th-century excellence of the McKim, Mead and White design."

The transparent entry-pavilion design, with its stepped roof a "ghost" of a vanished grand stair, drew skeptics. Wouldn't the design simply create a bigger hole in a facade that needed stitching together, not additional amputation? Some historic preservationists lobbied for restoration of the old stairway. Lehman and Polshek rejected that option. "The original stairs were double the height of the staircase at the Metropolitan Museum," Polshek explained. "It's much higher than we could expect people to comfortably climb. And you couldn't easily create access with dignity for older people or those with disabilities." Added Lehman, "We don't think you should have to ascend to art."

In drawing a broad arc in plan, then crossing it with a radial oriented to a subway entrance, the architect shifted the old frontal doorway to face the direction from which most people would enter (plan, page 122). The Museum and Polshek persuaded the transit authority to swivel the subway stair to face the museum. Polshek added benches and shade trees that attract mothers with toddlers and teenagers seeking a quiet place to

Project: *Brooklyn Museum Entrance Pavilion and Plaza, Brooklyn, N.Y.*
Architect: *Polshek Partnership—James S. Polshek, FAIA, Duncan R. Hazard, AIA, Don Weinreich, AIA, Robert D. Young, AIA, David E. Tepper, R. Craig Mutter, AIA, Robert S. Condon, AIA*
Consultants: *Robert Silman Associates (structural); Jaros Baum & Bolles (m/e/p);*
Contractor: *Bovis Lend Lease*



masts suspending a canopy (opposite) signal the entry into the Brooklyn Museum's new light-flooded lobby (this page).





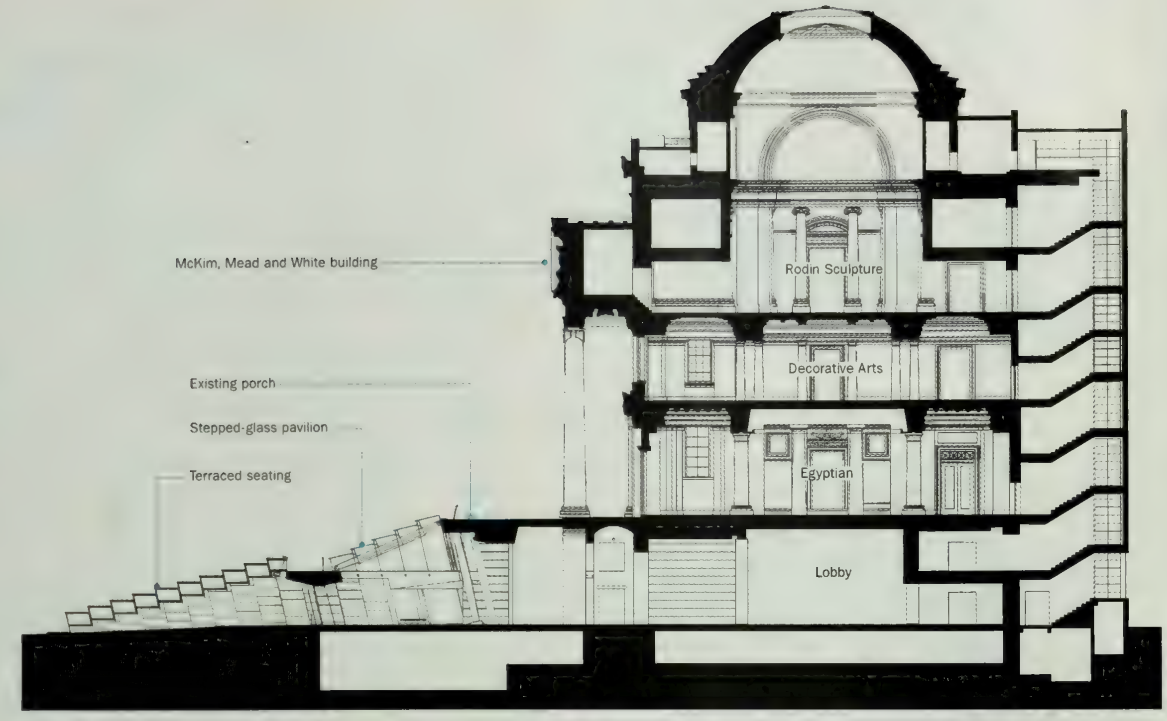
read. An amphitheater ascends the northeast quadrant of the arc, beckoning passersby from the opposite direction to take in the theater of the street with its sun-bathed steps and the impish fountain by WET Design. "Arnold asked for a great public space," explained Duncan Hazard, Polshek's managing partner. "This is the museum's gift to the city."

As built, the entrance could never be thought the empty void the critics feared. The "water white" glass of the curving wall under the roof cants outward to make the facade reflection-free, inviting people to check out the activity within. At the top of the amphitheater, a walkway over the entrance—the architects call it a *passerelle* (footbridge)—begs to be explored. From the walkway, people peer inside, their reflections bobbing along the vertical strips of glass in the roof. Those within stare back, or follow the roof walkers' reflections, which multiply, flutter, and evaporate. This quiet bustle doesn't mean the grand old building gets lost. As you enter, your gaze is actually drawn upward to the massive pilasters and entablature of the old facade. The museum no longer acts as if it has permanently hauled up its drawbridge.

Advertising Brooklyn's new vibrancy

Within the light-filled lobby, Polshek's team displayed the brick piers that support the massive portico above. Visitors feel this evocation of ancient Roman monumentality as they make their way through the narrow passages between the piers to the spacious, double-height lobby. "We contrasted the basic primitive mass of the brick piers with the technical

The great porch (below) is not open to the public, but it has been preserved. Behind the "two-story" facade lies five intricately worked levels (section, right). The pavilion occupies what was once a driveway fringed with scrubby grass. Polshek has added a wood-clad stepped amphitheater (opposite, top). Near the door, shaded benches welcome passersby. The low, curved planters leave a clear vista into the glass pavilion (opposite, bottom).



SECTION LOOKING EAST









FROM GRAND CIVIC PALACE TO GILDED-AGE SURVIVOR

Brooklyn may have looked bucolic as the first wing of what was then called the Brooklyn Academy of Arts and Sciences rose in 1898 (top). Its gigantic portico and mighty dome promised the likes of the Louvre, the British Museum, the Hermitage—in short, a grand civic palace. But Brooklyn, instead, became gritty Flatbush Avenue and industrial Red Hook, famous for the Dodgers and Coney Island rather than Degas and Corot. Only a sixth of the museum's Beaux Arts plan, by McKim, Mead and White, was realized, from 1897 to 1915 (middle). The range of galleries running along the long main facade is backed by only one of four planned gallery-wrapped courtyards.

When constructed, three massive tiers of steps rose an intimidating 28 feet to the portico. Severely deteriorated by the 1930s, they were removed in 1934 and a new street-level entrance was punched through the portico base (bottom). Not only did it mar the facade, it delivered patrons into a dimly lit no-man's-land: "What used to be the back of the auditorium," said Lehman. *J.S.R.*

It took "about a zillion" tries to detail a "jewel-like necklace"

How to make an entrance that is transparent yet substantial enough to hold its own against the original building's grandeur? The inspiration came, said Duncan Hazard, Polshek's managing partner, from Pennsylvania Station, a demolished masterpiece by McKim, Mead and White, the museum's original architects. "The glass-and-steel train shed wedded to the great Roman temple in front was a wonderful combination," he explained.

Polshek collaborated with Dewhurst MacFarlane, engineers specializing in glass construction. "Though they would have liked nothing better than to build the whole structure out of glass," explained David Tepper, a project architect at Polshek, "we preferred a combination of steel and glass because it made a richer reference to the Beaux Arts tradition." No obvious solutions presented themselves, however. "The hybrid nature of this structure was its biggest challenge," adds Tepper. "It was difficult to quantify and difficult to analyze." Asked how many iterations were studied, Hazard replied, "About a zillion."

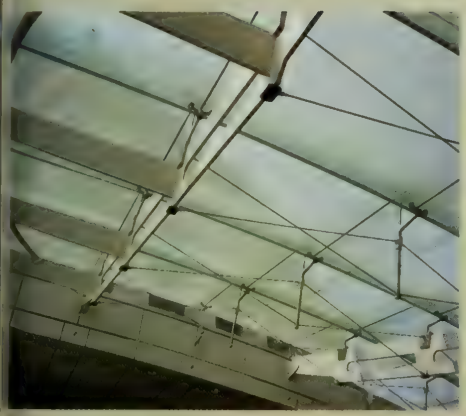
As built, thin steel rafters radiate from the existing building and support the fritted-glass roof panels. Curved 1-foot-high transparent glass panels act structurally as beams and visually as the roof steps. TriPyramid Systems, a company that has turned yacht-hardware expertise to the design of elegant glass-wall supports, devised the fretwork of cables, fittings, and stainless-steel king posts that tensions the flangeless metal rafters. At the sides of the glass shed, the designers introduced horizontal trusses into the roof-support system, laterally "suspending" the tensioned beams in between. Polshek compares the entry's "jewel-like" construction to a necklace. *J.S.R.*

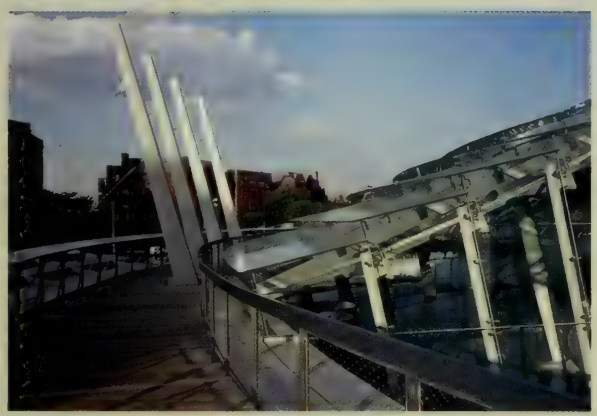




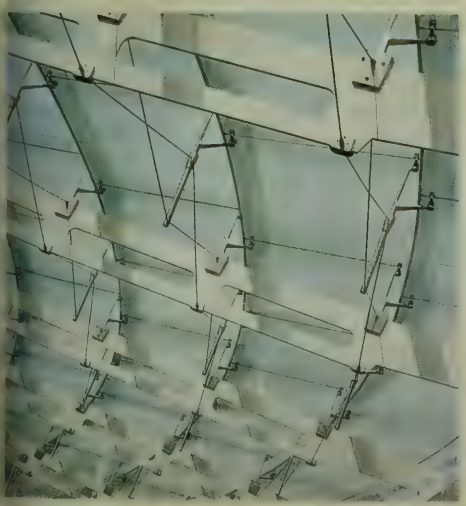
ON AT AMPHITHEATER

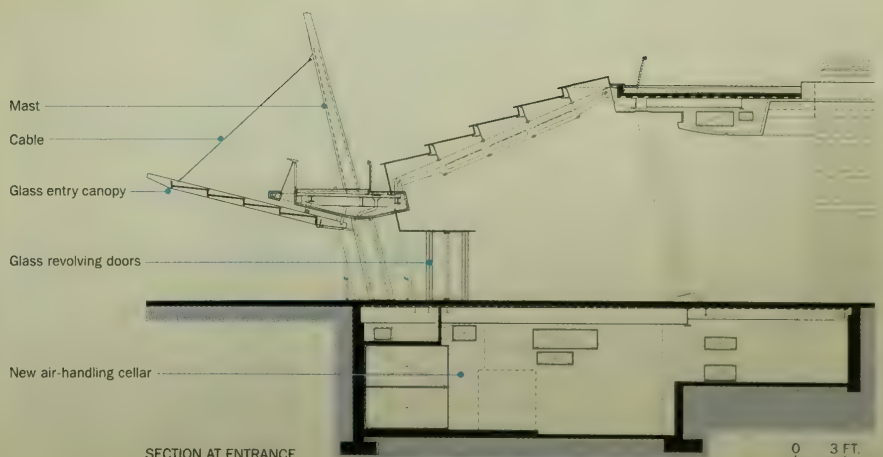
0 3 FT.
1 M.





Fritted glass clads the pavilion's stepped shed (opposite, right). The risers' curved, clear glass reflects those strolling the *passerelle* (near left). It invites visitors from the amphitheater (drawing, above). Masts suspend the entrance canopy via cables (drawing, below). Under the glass, stainless-steel cables and rods stiffen gray-painted metal rafters (bottom left). A horizontal arch anchors the glass-support assembly at each end (far left).



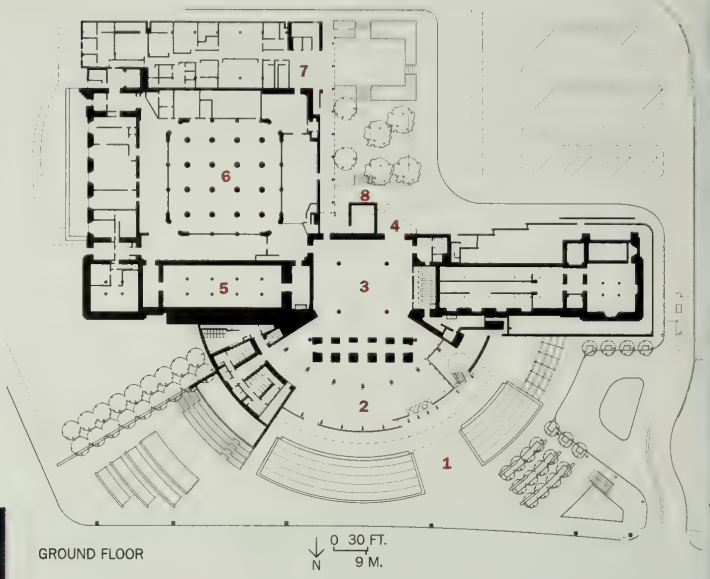


SECTION AT ENTRANCE

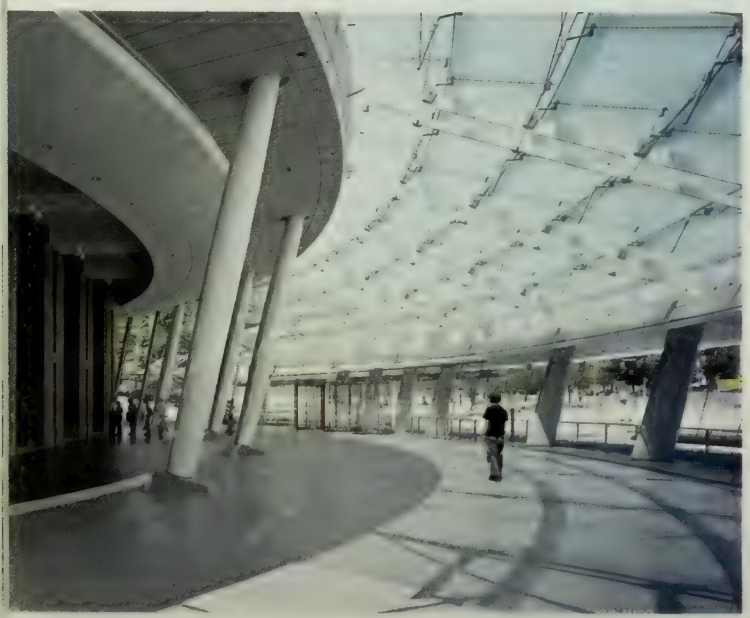
0 3 FT.
1 M.

Polshek's team revealed the massive masonry piers under the great porch (below). The pavilion's expansive interior fills during the museum's popular First Saturday (of each month) festivities (bottom). As well as inviting people in, it opens the the museum to the city (opposite).

1. *Entrance plaza*
2. *Entry pavilion*
3. *Lobby*
4. *Parking entry*
5. *Temporary exhibit*
6. *Exhibit*
7. *Existing main elevators/stairs*
8. *Future main elevators/stairs*







derring-do of the glass," explained Hazard. The angled end walls of the pavilion slice into this lobby behind the masonry, drawing daylight deep into the building.

The $63 million project included much unglamorous remediation. Yet-to-be-funded air handlers will fill space carved out under the entry pavilion. They will supply museum-quality climate control to the many galleries that are not yet air-conditioned. To separate pedestrian and auto movements, parking and drop-off areas were routed to the rear, where a second entrance was relocated so that all patrons will arrive in the remodeled main lobby. Nearing completion at press time, the lobby itself continues the public "invitation" that the entry promises by offering extensive guidance—both human and electronically interactive.

The Brooklyn Museum has much left to do. Realizing the potential of its extraordinary collections and its magnificent building will take more patience. (Polshek has been working there since 1986, when he and Arata Isozaki won a competition for a master plan.) But Brooklyn itself is changing rapidly, and Lehman sees the entrance as the most tangible advertisement of his agenda to link the museum's treasures with the life of the city. The inaugural exhibition for the new entrance, *Open House: Working in Brooklyn*, "celebrated the borough as a focal point for contemporary art in U.S.," explained Lehman. After all, he added, "The majority of New York artists now live and work in Brooklyn."

Lehman's team has also been reinstalling the collection and regrouping key works—such as 1,300-year-old Andean tapestries—in thematically decorated rooms. *New York Times* critic Michael Kimmelman found this art installation tasteless, but Lehman is unapologetic. "We have a huge opportunity with underserved audiences. That we provide the opportunity for people to look at art and relate to it in their own way is both the greatest challenge and the greatest reward." ■

Sources

Pavers: *Hanover; Liberty Marble*
Stone: *Branco Quartzo Granite; Indiana Limestone; Mesabi Black Granite*
Ipe wood deck: *Pau Lope*
Roofing, waterproofing: *Carlisle (built-up, elastomeric)*
Glass and skylights: *Pilkington (skylight and storefront glass); W&W Glass Systems (curved glass, revolving doors)*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



By **Naomi R. Pollock, AIA**

Filling the northern tip of Japan's Honshu Island, Aomori Prefecture is better known for apples than architecture. But the completion of Tadao Ando's Aomori Contemporary Art Center (ACAC) has helped to put the agricultural outpost on the proverbial architectural map. The country's first artist-in-residence facility, the ACAC is a serene haven where potters, printmakers, and other talented people come to hone their craft surrounded by nature.

While the ACAC needed an institutional presence, its built form had to be a blank canvas on which the artists could work and a benign intrusion that could meld with the landscape. To Ando, achieving these divergent goals called for an "invisible architecture" made of "pure geometric forms that are without a trace of arbitrariness." True to Ando's words, each of the three programmatic pieces—places for artists to work, display their art, and live—is housed in its own building, whose simple shape is neither jarring to the eye nor entirely inconspicuous. As a whole, the buildings' clean lines and quiet materials are at peace with their setting and underscore the natural beauty all around them.



Located on the outskirts of Aomori City, adjacent to the Aomori Public College, the ACAC occupies a secluded, hilly parcel surrounded by forest. From November to March, the site is blanketed with snow, but in summer it blossoms with flowers and trees. Leaving behind the sight and sound of cars, a trellised arcade guides pedestrians from the road to the heart of the complex: a two-story, circular building that holds the gallery, amphitheater, and administrative offices. From there, the land slopes downward to the bar-shaped studio and the dormitory buildings.

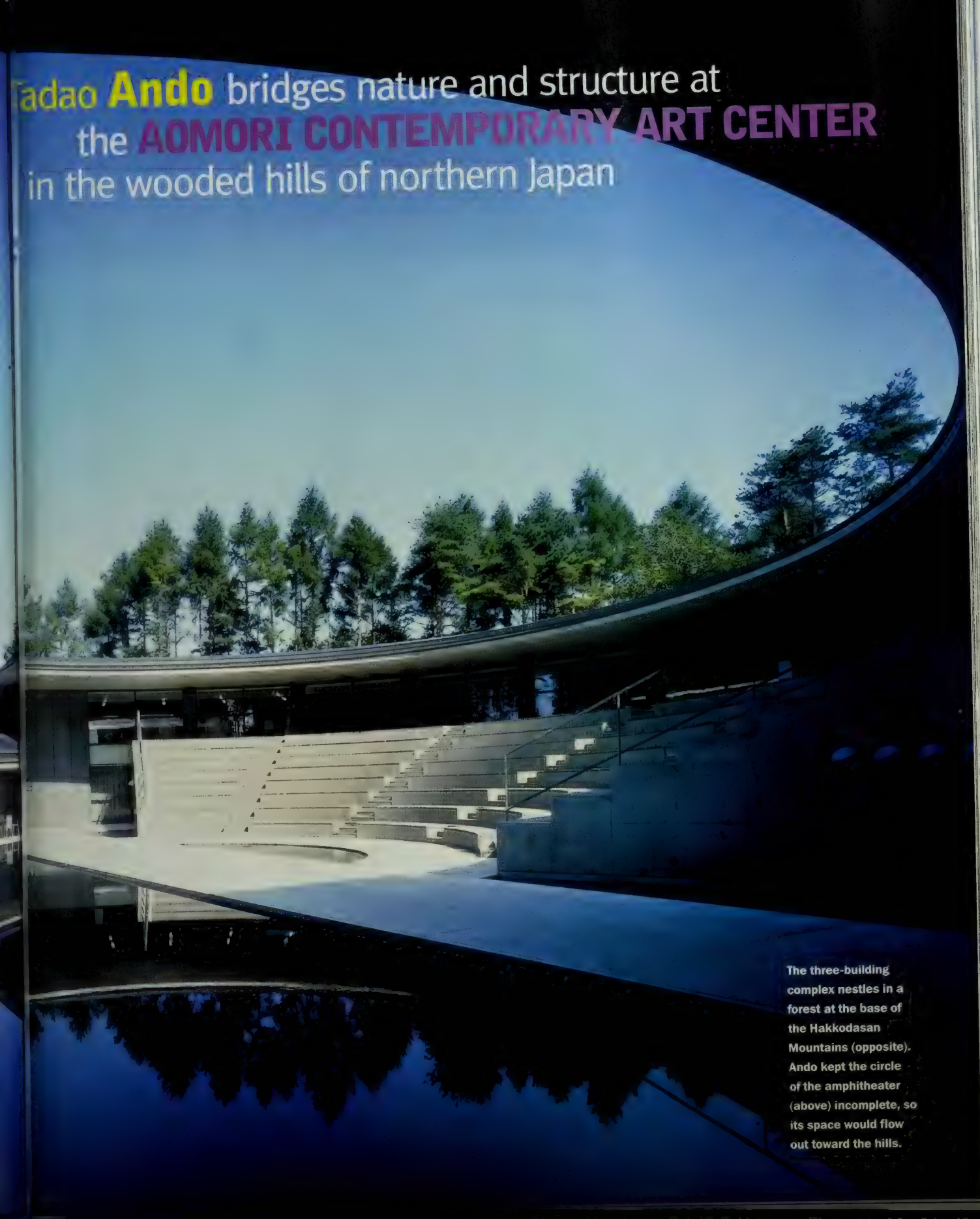
Naomi R. Pollock is RECORD*'s special international correspondent in Japan and the coauthor of* Japan 2000: Architecture and Design for the Japanese Public.

Project: *Aomori Contemporary Art Center, Aomori, Japan*
Client: *Aomori City*
Architect: *Tadao Ando Architect & Associates—Tadao Ando, principal; Hironobu Wakayama, design team*
Engineers: *Kanebako Structural Engineers (structural); P.T. Morimura & Associates (mechanical/electrical)*
General contractor: *Takenaka Corporation, Marukisaitogumi Company, and Yamaguchi Corporation Construction joint venture*



PHOTOGRAPHY: © MITSUO MATSUOKA, EXCEPT AS NOTED

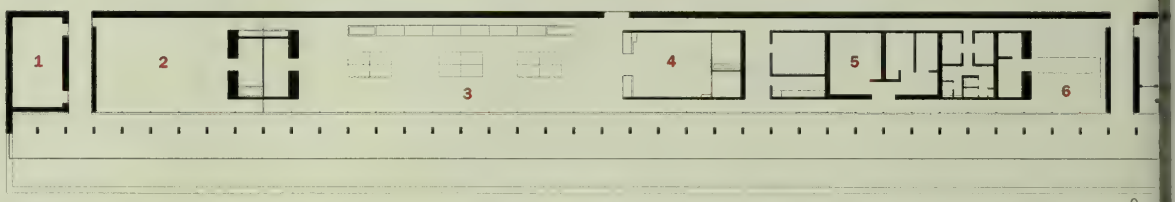
Tadao Ando bridges nature and structure at the AOMORI CONTEMPORARY ART CENTER in the wooded hills of northern Japan



The three-building complex nestles in a forest at the base of the Hakkodasan Mountains (opposite). Ando kept the circle of the amphitheater (above) incomplete, so its space would flow out toward the hills.



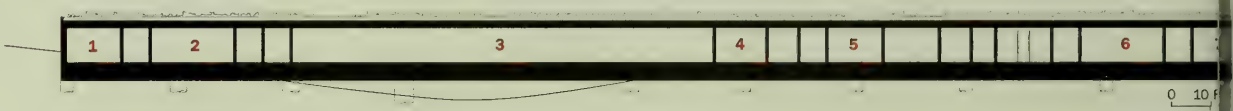
1. *Machine*
2. *Woodworking*
3. *Workshop*
4. *Printing*
5. *Editing*
6. *Dining*
7. *Kitchen*
8. *Bedroom*
9. *Terrace*



CREATIVE HALL

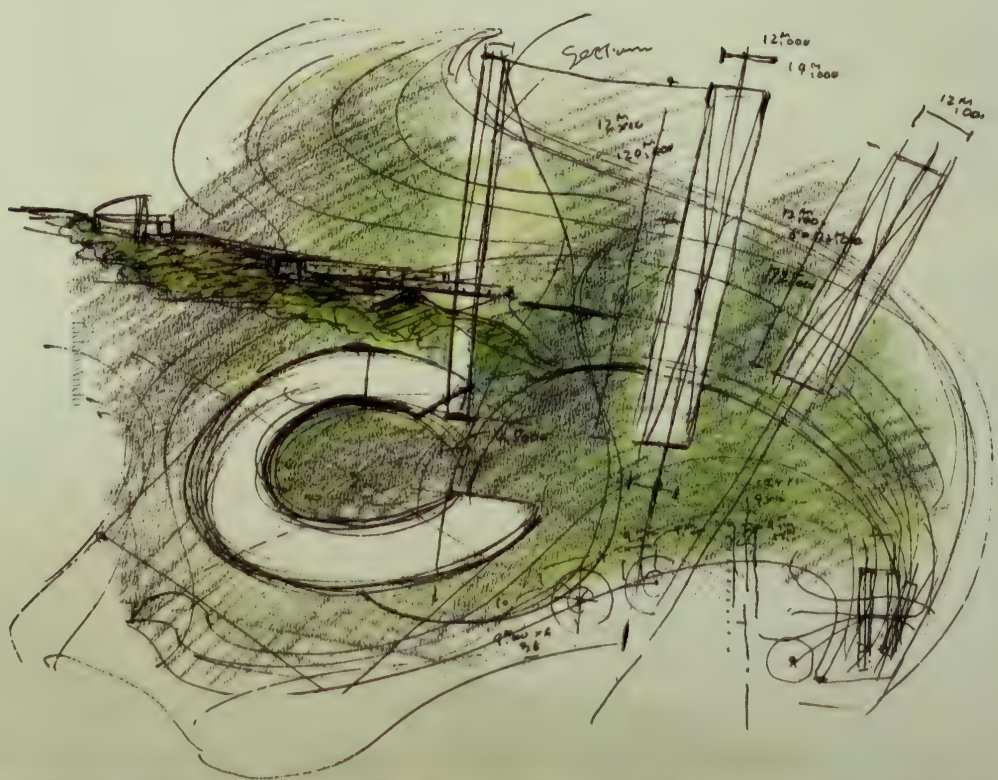


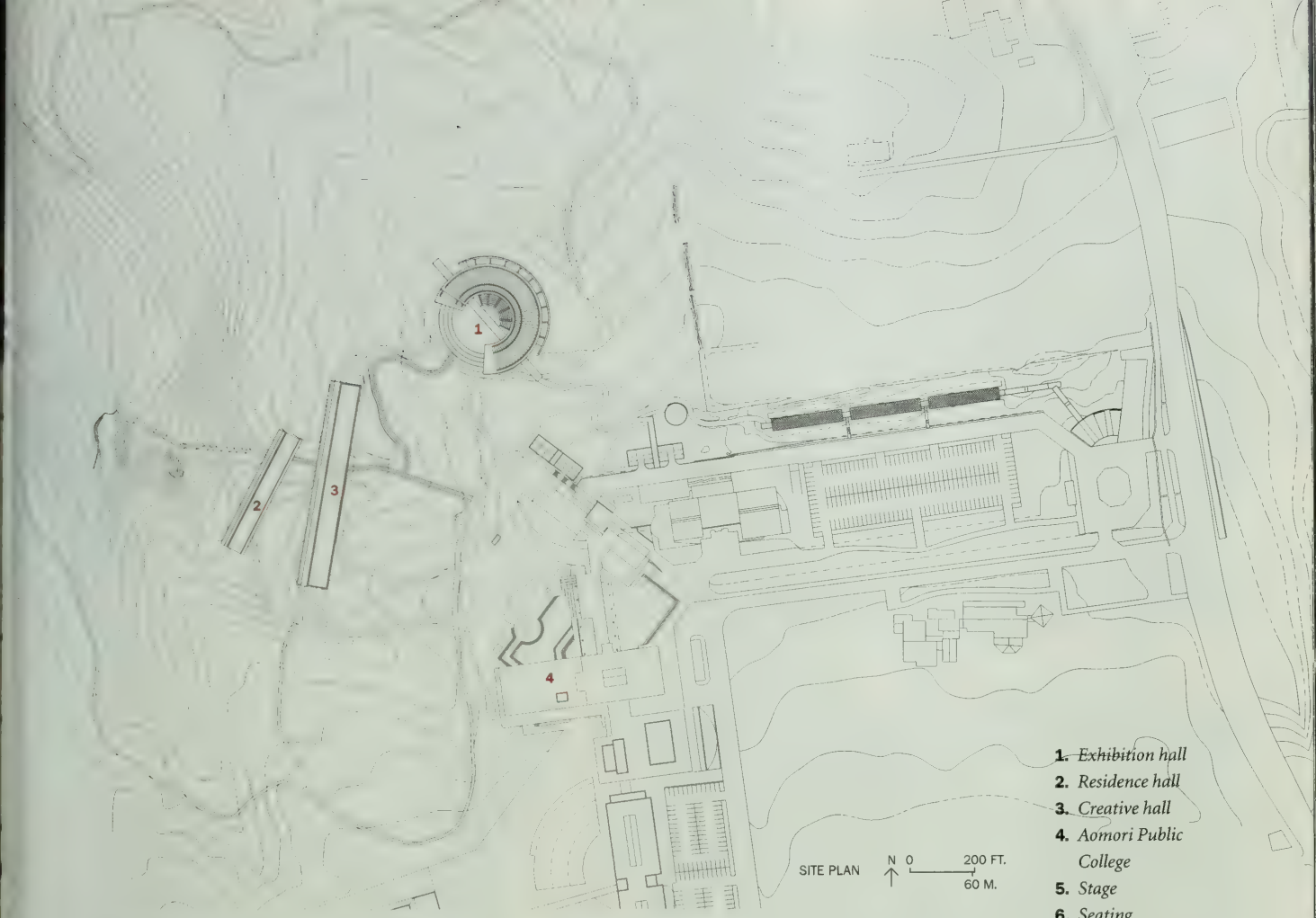
RESIDENCE HALL



CREATIVE HALL SECTION

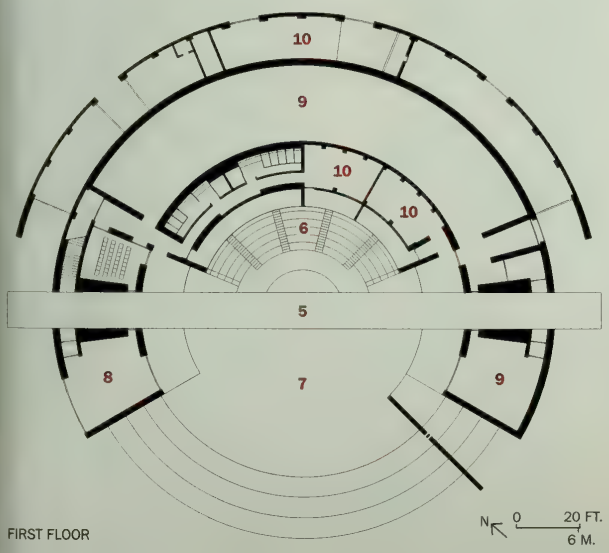
The three buildings of the complex (sketch, right) offer 43,360 square feet of space indoors and another 3,000 square feet outdoors in the amphitheater and terraces. Both the creative hall (plan and section, above) and the residence hall (plan, above) have long balconies that refer to traditional Japanese *engawas*, or verandas.



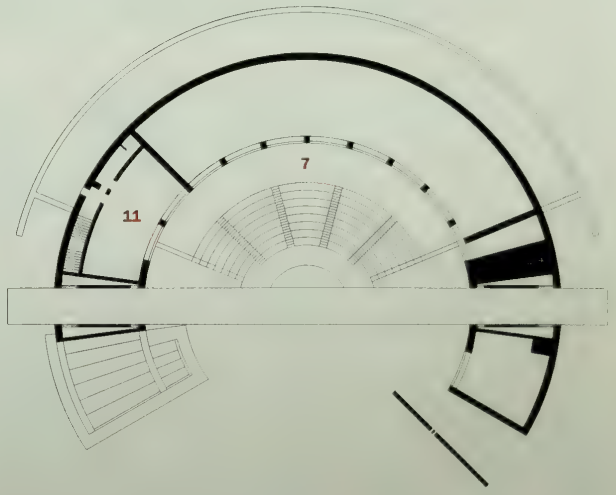


1. *Exhibition hall*
2. *Residence hall*
3. *Creative hall*
4. *Aomori Public College*
5. *Stage*
6. *Seating*
7. *Terrace*
8. *Library/tearoom*
9. *Exhibition gallery*
10. *Storage*
11. *Staff office*

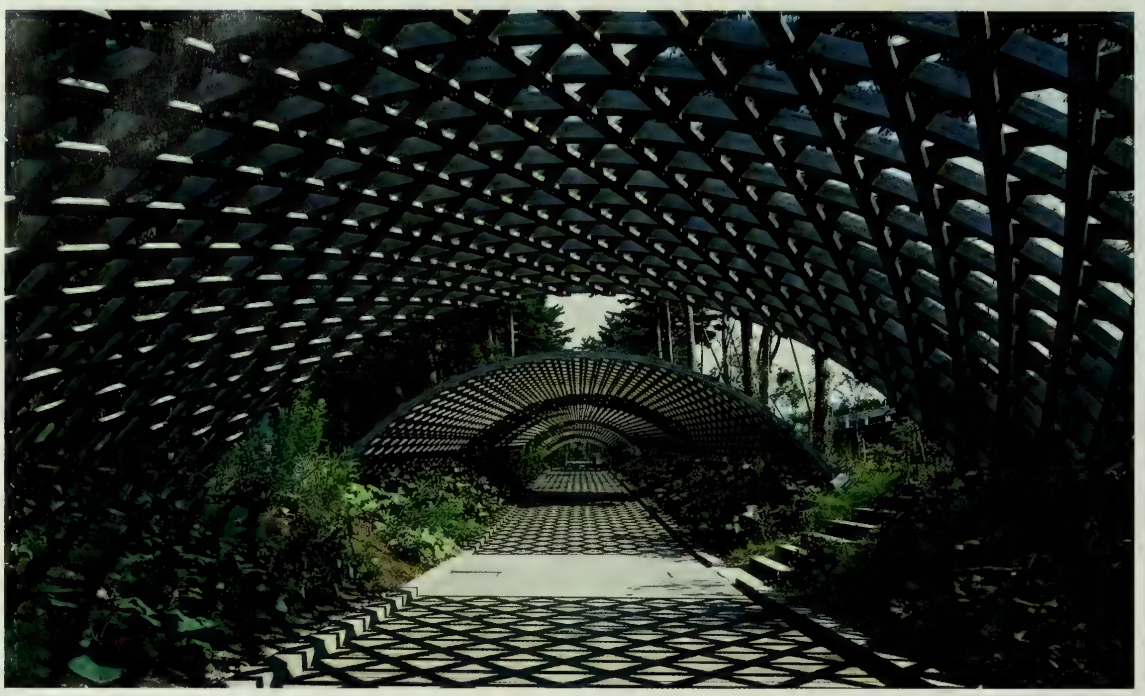
Ando used the natural topography of the art center's rolling 65-acre wooded site to embrace the three buildings and root them in the landscape (site plan, above). A shallow pool in the center of the gallery/amphitheater building also helps connect the realm of architecture with that of nature.



FIRST FLOOR



SECOND FLOOR







Arched trellises protect walkways and allow plants to become part of the architecture (left and middle). Water, in the form of a natural stream (bottom) and an artificial pool (opposite) are essential to Ando's design.

Although Aomori City's mayor originally had his heart set on building an art museum, budget constraints made that impossible. So he consulted with Goji Hamada, an internationally known performance artist and the current director of the ACAC, who suggested making an artist-in-residence center instead. Because it would not require a permanent collection, such a center would be cheaper in the long run and enable local citizens to interact directly not just with art but with artists. "If an artist comes here, his influence will continue to propagate like a pebble in a pond," explains Hamada. The mayor agreed and initiated an invited competition, which resulted in Ando's selection.

While Ando was in charge of the architecture, Hamada authored the program. He envisioned a place where up to eight artists from all over the world could live and work for three-month stints. In exchange for room, board, studio space, and supplies, the visitors present their projects to the public via exhibitions, performances, lectures, and workshops.

During their tenure at the ACAC, artists are free to make and display their pieces anywhere on-site, providing there are no permanent changes to the property; trees, terraces, and rooftops are all fair game. Many artists show their work in the crescent-shaped exhibition hall, whose concrete surfaces can accommodate everything from ceiling-suspended sculptures to floor-based installations.

Other participants choose the amphitheater. An outdoor room, it is clearly defined by tiered wooden seats and the two-story building embracing it on either side. At the same time, it is completely open to the sky. Juxtaposing the natural and the man-made, the would-be stage is actually a shallow, stone-covered pool that fans out toward the trees. Terraced like a rice paddy, the shimmering surface cascades over the edge. While the water is continually recycled, the image of flowing liquid metaphorically turns into sloping land. Artists who do not want to get their feet wet can perform on the narrow concrete strip hovering above the water. Cutting across the circular plan's diameter, it doubles as the circulation spine for the building as a whole.

Taking the water motif one step further, the studio and dormitory are both bridge buildings spanning small streams. While the





The circular exhibition hall has clerestory-lit gallery space (this page and opposite) for temporary displays of art. Ando hopes artists will use both indoor and outdoor spaces for exhibiting their work.

dormitory comprises blocks of bedrooms at either end and a communal dining area in the middle, the 430-foot-long "creative hall" is essentially one big atelier that contains an open work area anchored by a wood shop at one end and an informal lecture hall at the other. Specialized rooms for photo processing, printmaking, paint mixing, and sound recording round out the program. "If we don't have what the artists need, we get it," sums up Hamada.

Echoing the traditional Japanese *engawa*, or veranda, a covered, exterior porch runs the length of the building. Open on one side and enclosed with glass on the other, the porch is also the primary lighting source. "Natural light varies according to season and time," says Ando. "This too can stimulate artists."

Designed to minimize its impact on the soil, the studio's poured-in-place concrete structure follows the example of highway construction, using as few foundations as possible. Another technical innovation was using snow—the area gets 23 feet annually—to cool the building. At the end of the winter, snow is piled up in a large storeroom behind the gallery, where it gradually melts during the summer. Mechanical blowers then distribute the storeroom's cooled air throughout the building.

Just as Ando has carefully blended building and site, Hamada has bonded the ACAC with its community. Unlike many of the cultural centers built in Japan in the 1990s, which were strong on architecture but weak on programmatic follow-through, the ACAC lures local citizens to sketch the buildings, see exhibitions, and enjoy the scenery. Ando's architecture fosters these activities and should keep people coming back again and again. ■

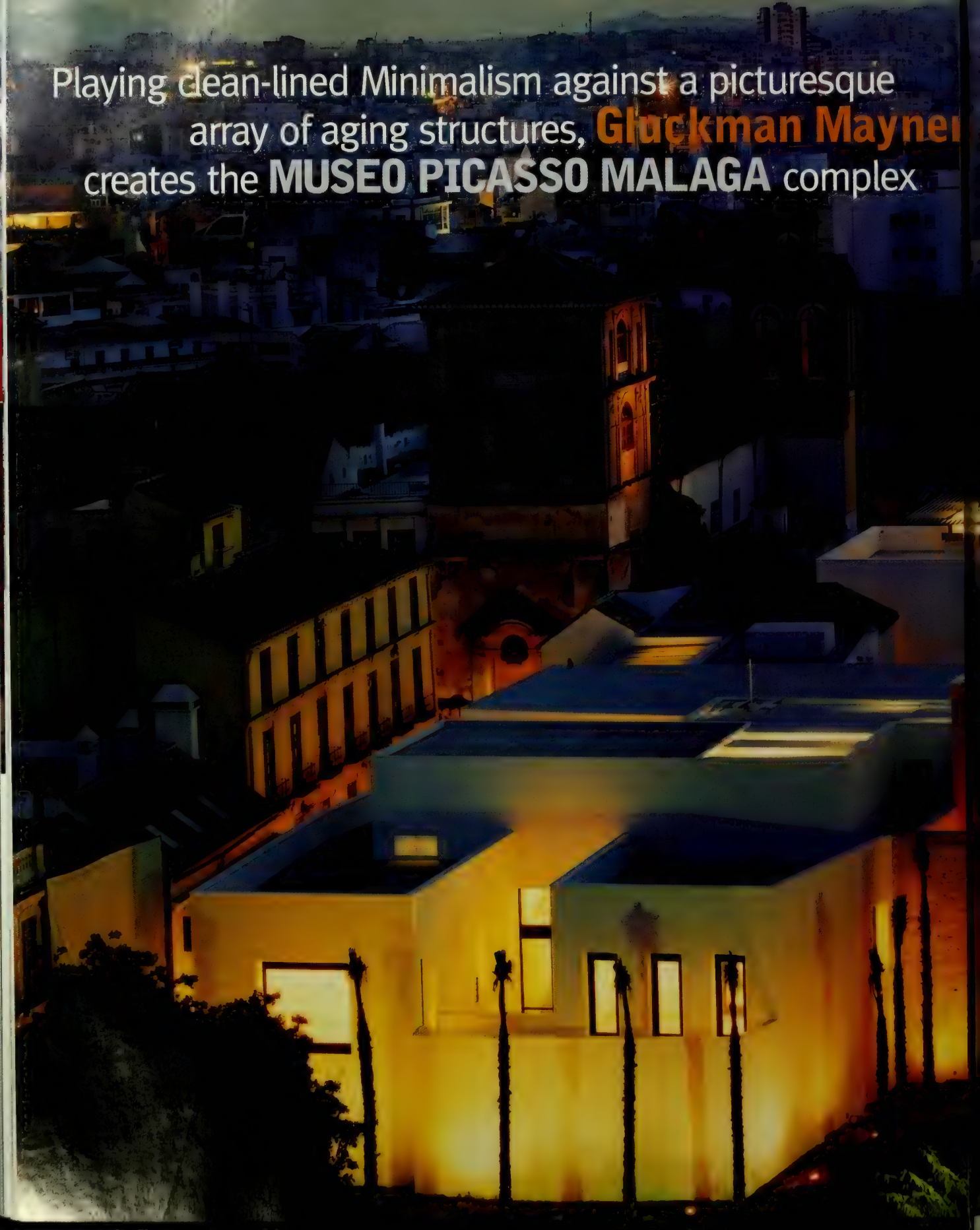
Materials

Exterior walls: *Exposed concrete with fluorine resin paint; steel panels; phosphating galvanized steel sash*
Exterior paving: *Cinder concrete with trowel finish*
Exterior ceilings: *Concrete with fluorine resin paint*
Interior flooring: *Cinder concrete with trowel finish; wood boards*
Interior walls: *Exposed concrete; plasterboard*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

PHOTOGRAPHY: COURTESY TADAO ANDO (RIGHT SPREAD)





Playing clean-lined Minimalism against a picturesque array of aging structures, **Gluckman Mayner** creates the **MUSEO PICASSO MALAGA** complex



The museum's context is low-rise and dense, incised by narrow streets veering off at oblique angles. Punctuated by occasional towers, the urban fabric evolved loosely over time. Gluckman preserved his site's piecemeal sensibility, while juxtaposing Minimalist precision with older forms.



By David Cohn

Can an architect Richard Gluckman apply to 16th-century European palaces the methods he developed for transforming obsolete New York City industrial buildings into spaces for art? The seasoned gallery designer put this question to the test when he, along with local architects Isabel Cámara and Rafael Martín, won the commission to adapt the Buenavista Palace into the Picasso Museum in Malaga, Spain.

Picasso was born in Malaga, and the idea of bringing his art here inspired his daughter-in-law, Christine Ruiz-Picasso, and her son Bernard to donate a large part of their personal collections to the city. Their decision culminated a long courtship led by Carmen Giménez, the museum's first director and overseer of this architectural conversion. Ruiz-Picasso selected the structure herself, mainly for its location in the city's oldest area, between Picasso's birthplace and the cathedral, and for the intimacy of its interior. At the time, the badly deteriorated building contained the Museum of Fine Arts. (Its collections now lie in storage, pending relocation.)

At first, the architect's intervention involved renovating the 24,000-square-foot palace and, on the site of a 1950s patio, creating a two-story, 19,000-square-foot wing for temporary exhibitions. As the project evolved, however, Giménez acquired several unrelated buildings to the east of the palace, all in poor condition. Here, the architects cobbled together a picturesque, 37,000-square-foot collection of structures—some new and others heavily restored or gutted—preserving original facades and massing wherever possible. This cluster, now housing galleries, an auditorium, offices, educational facilities, a library, and a shop, surrounds a court (centered on an ancient fig tree) that connects the ancillary buildings to the palace. During construction of this complex, archaeologists uncovered in the palace cellar rare in situ remains of the ancient Phoenician city wall, circa 700 B.C., as well as Roman and Muslim structures, which are all now open to visitors.

The Buenavista Palace's checkered history gave the architects a surprisingly free hand in its restoration. Though the 1530 stone facade—combining primitive Renaissance details with a Mudejar, or Moorish-style, tower—has survived, the palace suffered many uses and abuses over the years. In the 1950s, the building, then a near ruin, underwent drastic alterations during its first conversion into a museum. With the exception of the

David Cohn is RECORD's correspondent in Spain.

Project: *Museo Picasso Malaga, Spain*
Architects: *Gluckman Mayner Architects—Richard Gluckman, FAIA, principal; Martin Marciano, project architect; Elena Cannon, Celia Chiang, Srdjan Jovanovic-Weiss, Taro Narahara, Ruso Panduro, Amina Razvi, Joao Regal, Elizabeth Rexrode, Kaori Sato, Nina Seirafi, Tameki Uchikawa, Thomas Zoli, project team*
Associate architects: *Camara/Martin Delgado Arquitectos*
Engineer: *Arup*
Landscape: *Maria Medina*

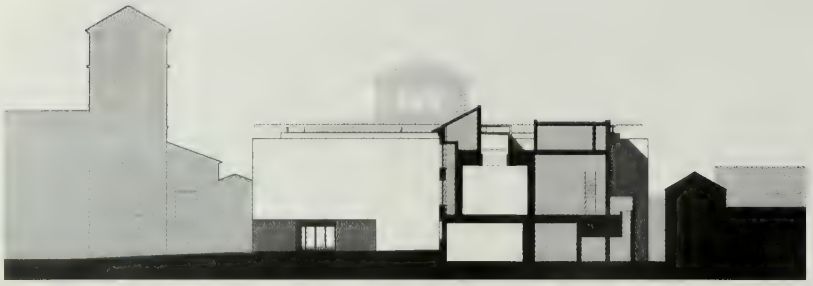


Existing palace
New wing: temporary exhibitions
Incorporated ancillary buildings
Roman amphitheater





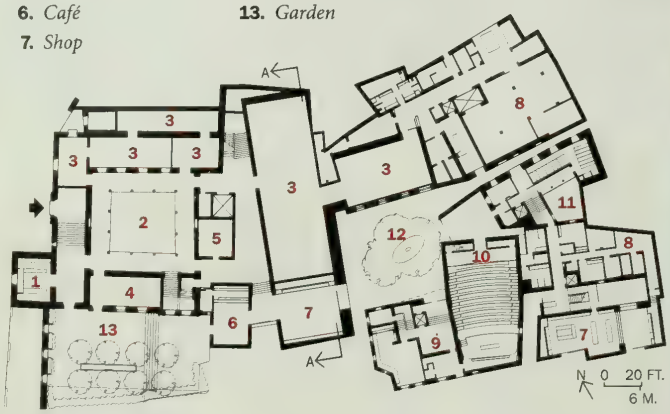
Fixed anodized-aluminum louvers provide sun protection over the skylight and roof of the museum's temporary-exhibitions wing (opposite and this page, bottom). The roof deck will likely provide a venue for catered public receptions. Expansive views from this perch take in the scenic jumble of surrounding rooftops, as well as the cathedral's dome and spire (top).



SECTION A-A

0 20 FT.
6 M.

1. *Ticket counter*
2. *Patio*
3. *Exhibition*
4. *Reading room*
5. *Video*
6. *Café*
7. *Shop*
8. *Storage*
9. *Education*
10. *Theater*
11. *Library*
12. *Court (with fig tree)*
13. *Garden*



FLOOR PLAN

The museum's administrative building, clad in white stucco (below), stands in contrast to the rougher masonry exterior of the museum's library, adjacent to it (opposite). The patio, though modified over time, occupies its original 16th-century location in the palace (bottom).







handsome original patio—featuring marble columns with exquisite Ionic capitals from 16th-century Italy—and impressive wooden ceilings with elaborate Mudejar joinery, most of the remaining interior details and finishes were of recent vintage and poor quality, according to the architects. Such elements included the floors, moldings, and much of the woodwork.

Peeling back the 1950s ornament and finishes, Gluckman approached the restoration, he says, with an intent to "quiet down" the spaces and draw out their most favorable proportions to create a neutral setting for displaying art. At times, however, he may have taken this approach too far, trying to smooth out, perfect, and otherwise adjust the palace, rather than acknowledge the idiosyncrasies that distinguish it. From the patio, he removed a modern fountain—with the potential for gurgling and animated reflections of water—and modeled the court's spare restoration on a similar Andalusian example in New York City's Metropolitan Museum of Art. Though unassailable as a historic source, the form is now quite removed from the traditional spatial connections and characteristics of such patios in southern Spain. The surrounding galleries, now home to the permanent collection, had opened onto the central space, but Gluckman has linked them in an independent circuit for reasons of climate control and circulation.

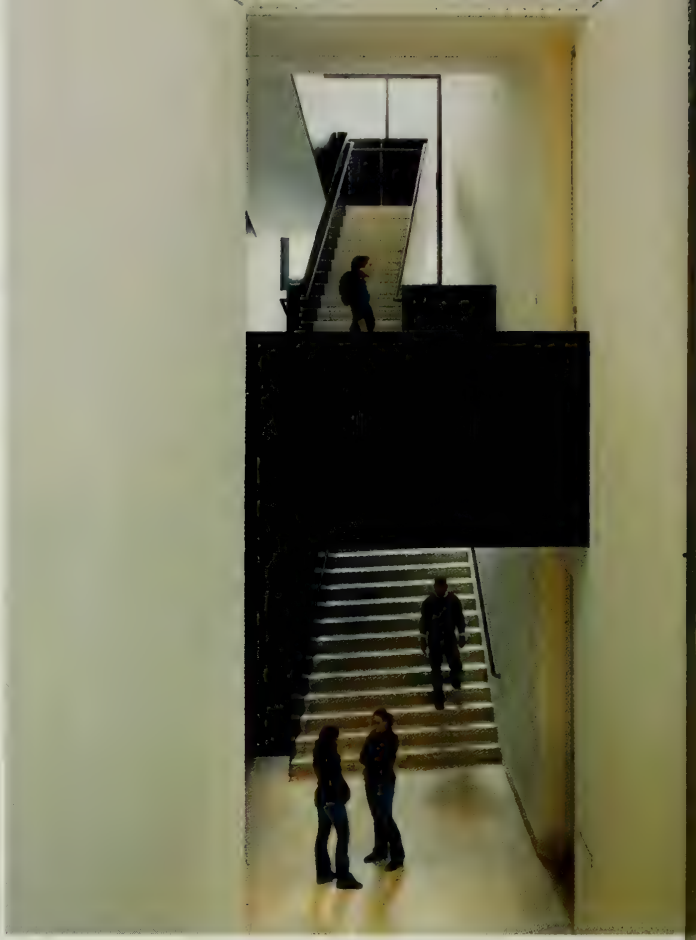
In the interests of proportion and axial alignments, the architect says, he adjusted other openings and demolished some interior walls. After stripping the gallery walls to the masonry, he refinished them in plaster without moldings, and separated them from the floors with his signature reveals. Certain original doors remain, but the fenestration all had to be replaced with wooden replicas to accommodate double glazing. One of the palace's various window configurations served as the prototype. In a welcome touch of local color, woven hemp mats, or *esterones*, hang outside the windows to filter in daylight.

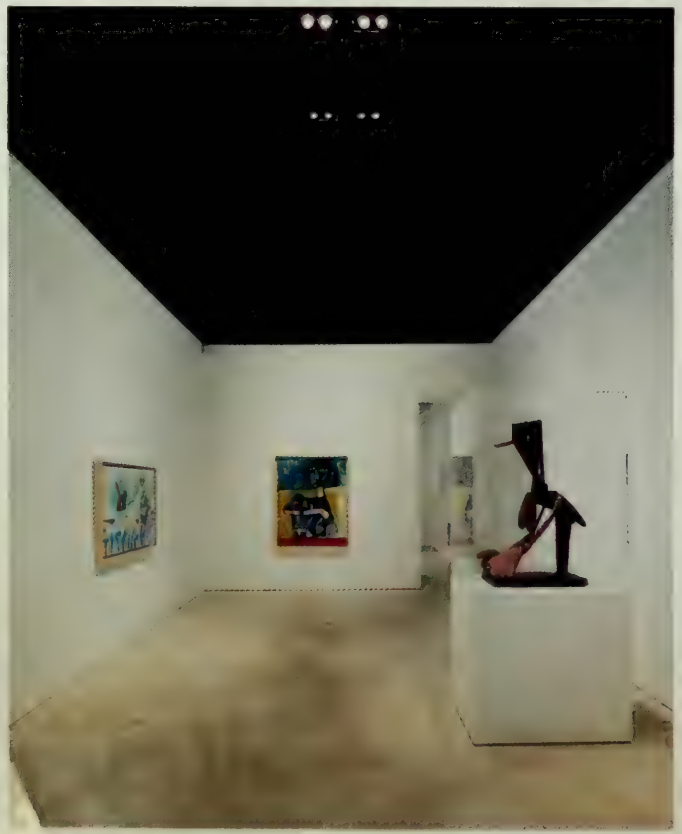
To tone down the floor and prevent reflected color from interfering with the paintings, Gluckman explains, he replaced the traditional patterned ceramic tiles, installed in the '50s, with large pieces of pale marble. Also in a measure to calm the spaces and defer to the artwork, the architect stained the beamed ceilings, the gallery's most distinctive feature, a recessively dark brown—even darker than traditional Spanish woodwork. His modern mechanical interventions appear equally discreet, with ceilings carefully pierced for lighting and smoke detectors—an option the architect considered less obtrusive than visible track systems. Window seats, ceiling borders, and perforated marble grilles conceal air supplies and returns.

The new wing, for temporary exhibitions, allowed Gluckman to create large, Modern spaces, which, he says, offer the functional flexibility for large-scale contemporary work, as well as a vivid spatial contrast to the "actually quite small (by today's standards)" palace rooms. A central skylight, veiled with a 16-by-96-foot, taut cotton scrim, dominates the high, open upper gallery. Here, no other details intrude on the grand Minimalist play of space, proportion, and light. Above the scrim, two layers of double glazing and motorized shades, and a crown of fixed, anodized-aluminum louvers—

Views from the interstitial space between the palace and new construction reveal a stair with steel-plate rails (right) and stretched-cotton gallery ceilings (below), installed beneath the skylights by sailmaker Farley Fontenot. In the palace, centuries-old wood ceilings (bottom and opposite) remain.







an assemblage consciously inspired by Renzo Piano's Cy Twombly Gallery in Houston—temper the Mediterranean rays. A double-height, skylit atrium, separating these galleries from the palace, gives access to a café, a garden by Maria Medina, and the fig-tree court.

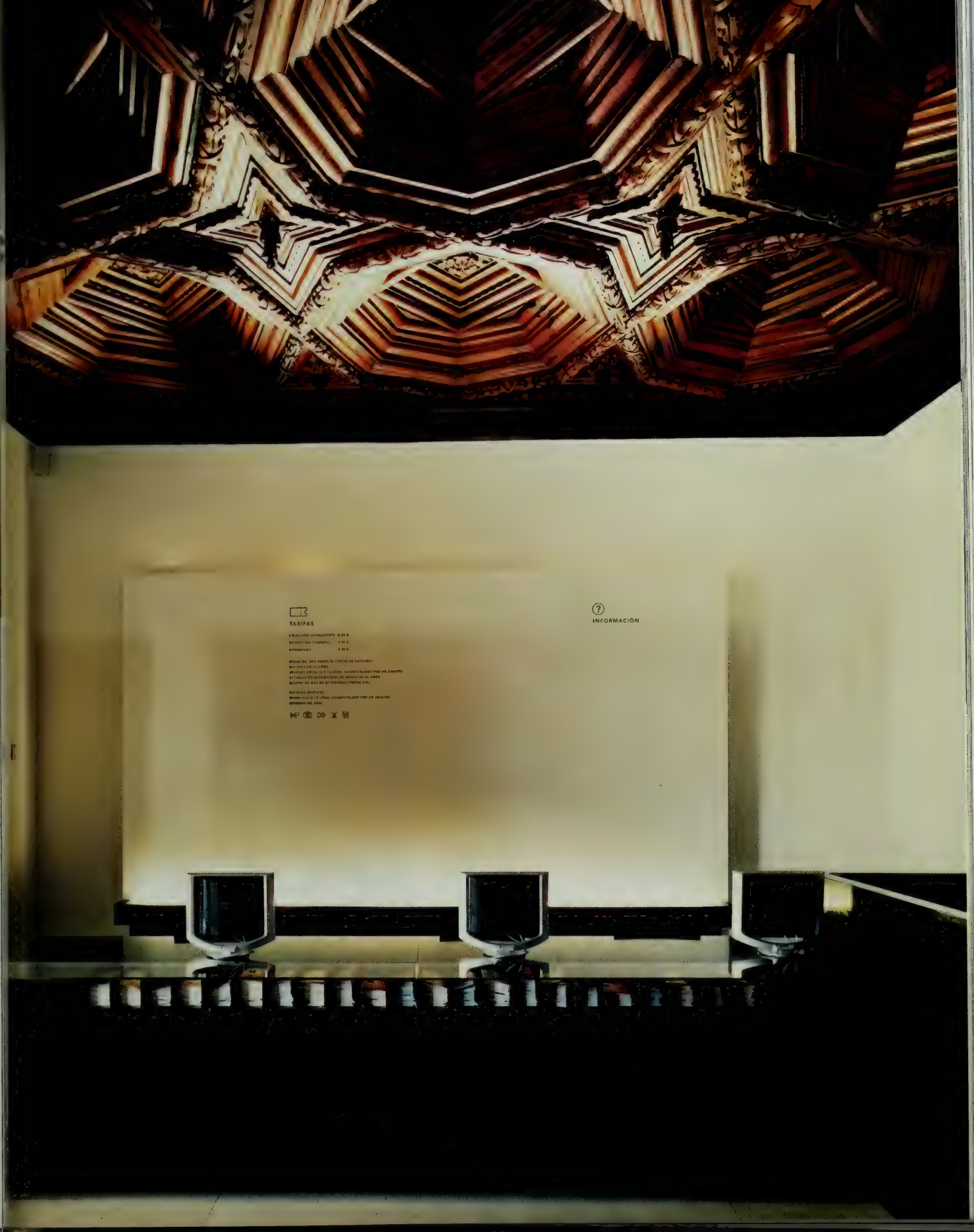
Gluckman relishes the contrast between the large, new galleries and the intimacy of the original palace, but this contrast can sometimes seem rather aggressive. While the architect, in the curatorial interests of showing art in a neutral setting, went to considerable trouble to quiet the character of the palace galleries, the dramatic scale shift to the new spaces claims a great deal of attention in its own right.

The paintings and sculptures in the permanent collection are largely family pieces, portraits and domestic scenes that Christine Ruiz-Picasso selected for herself from the master's legacy, with dogs, cats, and other charming details, and they are dimensioned for a conventional home, so the palace's galleries suit them well. But this visitor, at least, missed a bit of the rooms' own warmth and color—the sounds of a fountain in the patio perhaps, or a few of the curious details, misalignments, and inconveniences that the architects so carefully corrected. Clearly, the 1950s interventions, with their abundance of ill-conceived details, did a disservice to the palace's authentic character. And Gluckman cleaned up those intrusions with high-quality materials and careful detailing. But the aim of eliminating distractions in the service of art, if too zealously applied, can also damage our experience of historic spaces. ■

Sources

Windows: *La Navarra Tallar (custom)*
Glass: *Saint Gobain; Okalux*
Lighting: *Erco; Ignuzzi; Isometrix*

For more information on this project, go to Projects at **www.architecturalrecord.com**.


TARIFAS
INFORMACIÓN



The museum occupies the renovated Royal Boathouse built by King Christian IV in the early 17th century (opposite). Brick vaults (right) rise dramatically above the skewed walls of birch panels and slanting oak floors of the new museum space.

Studio Daniel **Libeskind** skews walls and slants floors in a former boathouse to heighten the experience of the **DANISH JEWISH MUSEUM** in Copenhagen



By Nicholas Adams

Lucky is the wanderer who finds the gate into the garden of the Royal Library in Copenhagen. Shielded behind high brick walls is one of the great oases of downtown Europe. Cool, wet weather gives the trees that extra shot of green. The traffic is sufficiently distant so that the gentle splash of water from a fountain dominates any urban noise. Nearby, a large bronze statue of the great Danish philosopher Søren Kierkegaard sits in (uncharacteristically) peaceful meditation. *Rus in urbe*—the countryside in town.

Along one side of this garden oasis, Studio Daniel Libeskind has shoehorned a small new museum into the brick Royal Boathouse built in the early 17th century. Originally part of the old Arsenal adjacent to the Royal Palace, the new Danish Jewish Museum barely ripples the tranquillity of the south side of the garden. Only six granite blocks splayed across a slanted apron with white strips along the pavement, plus a simple signpost and a massive bronze door inscribed with the word *Mitzvah*, mark the entrance.

Mitzvah means "a good deed" or "the duty to do the right thing" in Hebrew, and it is a surprising theme for a museum dedicated to the long and relatively peaceful history of the Jews in Denmark. Whose good deed and what right thing, one wonders? The reference is specifically to the events of October 1943, when thousands of Danish Jews crossed the narrow straits of the Oresund separating Denmark from Sweden to escape the Nazis. (Among those who fled were the young Arne Jacobsen, a Jew, and Jørn Utzon, who had Jewish family members.) Aided by local resistance leaders, alerted and protected in some cases by their Christian neighbors, this rescue represented the only instance in World War II when a national population collaborated systematically to help Jews escape. And, as Hannah Arendt famously noted in *Eichmann in Jerusalem* (1963), this was the only instance in which a Jewish population acted to save itself. More than 7,000 Danish Jews survived the war, more than 90 percent of the country's Jewish population. The mitzvah of the Danes in 1943 provided Daniel Libeskind with the thematic heart of the museum: The letters of the word not only form the logo at the door, but their jagged shapes interlace abstractly to generate the cranked corridors and exhibition spaces within.

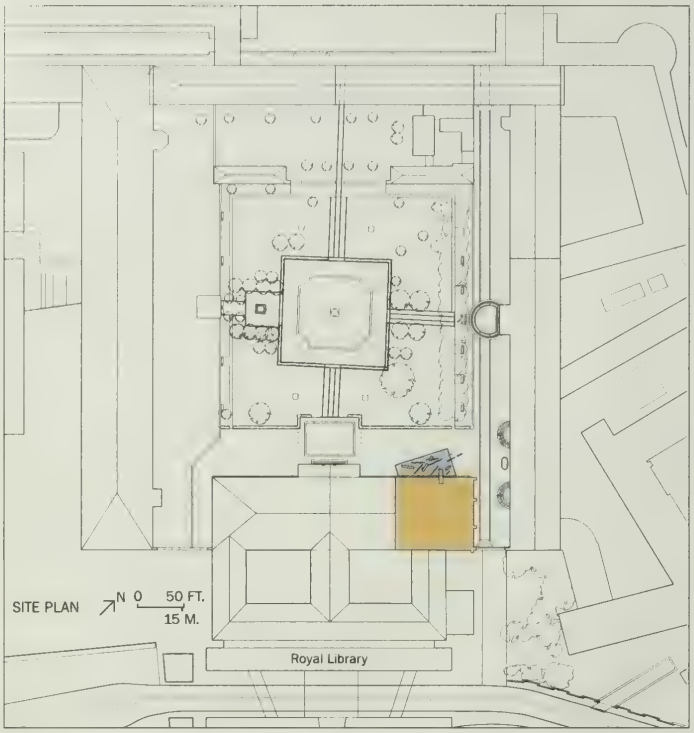
The ground floor of the old boathouse approximates a square, measuring 80 by 80 feet, with a rectangular bite taken out for bathrooms, which leaves a stumpy L-shape for display. (Storage and administrative facilities are off-site.) Iron rings attached to the old brick groin vaults indicate that the space may have been intended for boat storage. Nevertheless, round holes at the crowns of the vaults for the escape of smoke attest to its subsequent use as a workshop as well.

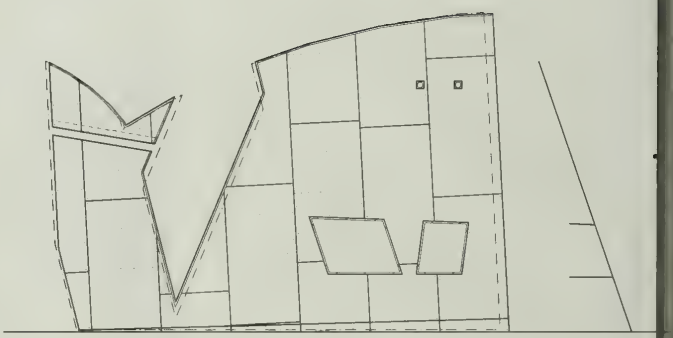
This is not a museum of conventional galleries. Visitors enter the building as a Dane might have entered a boat in 1943 to make the dangerous trip across the waters to Sweden. They are greeted by a prowlike ticket booth and are then directed past a cloakroom to a small video room. Once museumgoers have viewed the videos, they pass into the twisted hallways and passages. The spaces foster movement and transit, without creating a frantic quality. For *Space and Spaciousness: An Exhibition About Jews in Denmark*, on view for the next year or so, visitors walk through five areas defined by thematic content. The displays in the vitrines are accompanied by text/image touch screens.

Libeskind stripped the interior down to the bare brick walls and then clad the walls of the gallery spaces in light brown Norwegian birch panels, which in turn are attached to black chipboard and supported by metal stud walls. Rising to different heights, the canted and pitched walls give the visitor a sense of being enclosed by the abstracted forms of the

Nicholas Adams is professor of architectural history at Vassar College. He is writing a book about Gunnar Asplund's Law Courts in Gothenburg, Sweden.

Project: *Danish Jewish Museum, Copenhagen, Denmark*
Architect: *Studio Daniel Libeskind—Daniel Libeskind, principal; Susanne Milne, project architect; Juan Arana, Guadalupe Cantu, Tate Conrad, Shawn Duffy, Miguel Plata, Robert Hirschfield, Jens Hoffmann, Nadine Jerchau, Sven Pfeiffer, Jason Scroggin, design team*
Renovation architects: *Fogh and Følner*
Owner: *Danish Jewish Museum*
Consultants: *Hansen and Henneberg (lighting, safety, m/e engineers); Moe and Brødsgaard (structural, m/e engineers); Kvorning Design & Kommunikation (exhibition, graphics); GHB Landskab (landscape)*





TRUE ELEVATION OF VITRINE OBJECT A-A

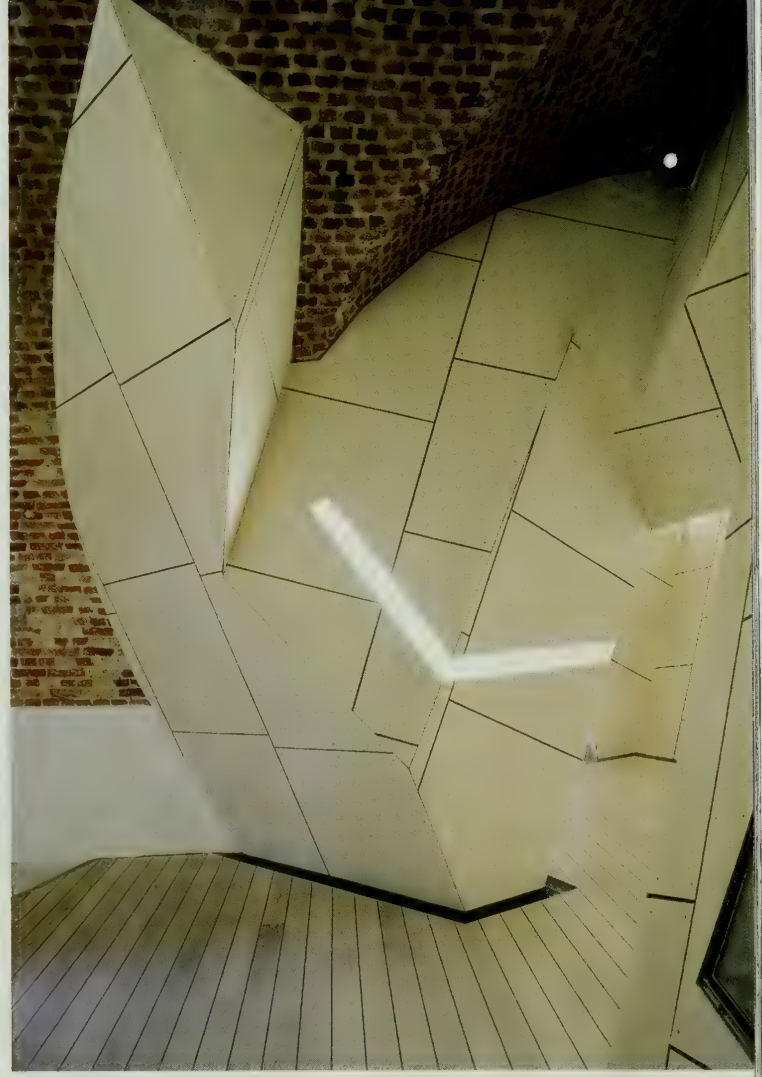


FLOOR PLAN

1. *Entrance*
2. *Tickets*
3. *Coatroom*
4. *Main exhibition*
5. *Vitrine objects*
6. *Museum shop*
7. *Office*
8. *Restrooms*
9. *Terrace*
10. *Cinema*

A colorful desk (opposite, left) directs visitors to the bookstore near the entrance to the museum. Nearby, the gallery walls billow up forcefully along the brick vaults of the former boathouse (opposite, right). Black chipboard seams and slashes of recessed lighting accentuate the geometry of the birch panels, which are mounted on a metal stud-wall structure.





ship's hull. The floor slants, as well, in two somewhat alarming, camber-like waves as the "boat" heels and yaws. Slashes for light fixtures embedded in the walls suggest searchlights. We are, evidently, at sea. This is only the first reading. Perception is quickly modified by the way in which the black seams between the panels and the light slashes create forward and reverse perspectives. A fascinating tension between the wall mass and the perspective lines set up by the panel seams emerges: What is up close slides away quickly; what is far away seems to move precipitously closer.

Parallelogram-shaped glass vitrines placed in the birch walls and, in some instances, around corners, establish their own tangents. The result owes as much to the computer age as to the Expressionist film *The Cabinet of Dr. Caligari*. Indeed, the push-me-pull-you perspective of seams, slashing lights, and vitrines calls to mind Baroque architects such as Guarino Guarini or the trompe l'oeil perspectives of the Renaissance architect Philibert de l'Orme. A trick perspective door stands at the far end of the gallery space; the wood panels seem to sneak their way up, like smoke or clouds, into the holes in the crown of the vaults—another Baroque effect.

Libeskind has explored this repertory of visual effects before, and the relationship of Copenhagen to his earlier museums such as the Jewish Museum in Berlin [RECORD, January 1999, page 90] or the Imperial War Museum North in Manchester, England [RECORD, October 2002, page 124], comes immediately to mind. Of course, the modest $4 million budget and the 4,844-square-foot size alone would defy too close a comparison. Libeskind's museum in Copenhagen occupies an already constructed building, unchanged on the outside in order to blend with the other buildings around the Library Garden. Additionally, not all the intentions for the building have been carried out. A look at the models on display at the Danish Architectural Center reveals that certain elements around the entrance, as well as some light patterns inside, were eliminated.

Nevertheless, economy works to the Danish Jewish Museum's advantage. Using only the limited range of color provided by the birch panels—an appropriately Scandinavian reference—produces a sufficiently lush, tonal variety. The Imperial War Museum in Manchester, by contrast, appears diagrammatic and its forms simplified, while the Jewish Museum in Berlin has a didactic monumentality. And there are moments in Copenhagen when the tradition of the wood ship blends naturally with the sprayed zigzags of computer technology: You are at sea in 1943, and you are also clearly here in the present—in an early-17th-century boathouse near the Danish Royal Palace in spaces that are possible only today. The blending of past and present, of near and far, of imagined and real, was one of the great achievements of the Berlin Museum when empty. On a smaller scale, and with more limited means and ambitions, Copenhagen manages similar effects very well. The vitrines are sealed: From an architectural point of view, the museum is the equivalent of the Berlin museum





Glazed vitrines project forward from free-standing objects (below), including ones shaped like the hull of a boat (left). The sloping oak-plank floor seems to float between the ventilation scuppers (opposite) and is carried by joists over a concrete slab.

empty, rather than full.

But will visitors accustomed to think of the museum as a container for the objects on display know all this? At Berlin, a six-pointed star connected to significant sites of Jewish history acted as the defining thematic motif. At Manchester, the shardlike imagery is meant to evoke the "contemporary world shattered into fragments by conflict," in Libeskind's words. Neither effect is easily understood. In Copenhagen, the metaphor is decidedly literal (and partially explained in a pair of introductory videos), yet some visitors are clearly mystified by the pitching and heaving of the floor. And there are other problems, possibly more profound, with Libeskind's interpretation of the program.

In its inaugural publication, the museum made it clear that this is not meant to be a Holocaust museum. Indeed, the events of October 1943 are represented elsewhere in Copenhagen, and the mission of the Danish Jewish Museum was to reflect the entire history of the Jews in Denmark, from their invitation in 1622 by the king to come to Denmark (ostensibly to act as merchants) to the present. Focusing on the dramatic crossing of the Oresund in October 1943 reduces the long history of progressive assimilation and relatively tranquil coexistence between Danish Christians and Jews to a single moment. And how much should be made of the country's role in 1943? Yes, many were saved, but Denmark's pro-Nazi sympathies were not inconsiderable, and some now still feel that the country could have done more to help Jewish refugees in flight from Germany. Emphasis on October 1943 makes it hard to see the variegated nature of the rest of the Jewish experience in Denmark.

And Libeskind has not made it easy on the viewer. One vitrine, which explains how the Jews came to Denmark, is so low that visitors either pass it by or must scrunch down to see it. Sloping floors and walls sometimes meet vitrines that are themselves angled, so that the labels (and objects) slide away from the viewer. Some visitors lean hard into the walls to support themselves while they peer into the vitrines.

Libeskind deserves enormous credit for leading with the best narrative line to striking effect. But the question remains about making a Holocaust museum for a collection of objects that is not about the Holocaust: Is creating a baby Bilbao worth this distortion of the historical narrative? When we highlight the heroism and bravery of some Danes over several months of 1943, we lose touch with the texture of Jewish life in Denmark over the 300 years that the museum is meant to explore. In the one museum in Denmark devoted to a minority, that seems like a significant loss. ■

Sources
Birch plywood cladding: *Finnforest*
Glazing: *Scanglas*

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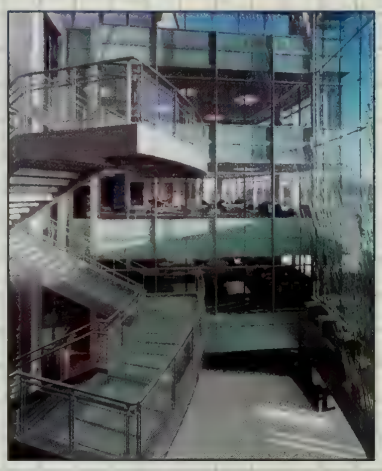
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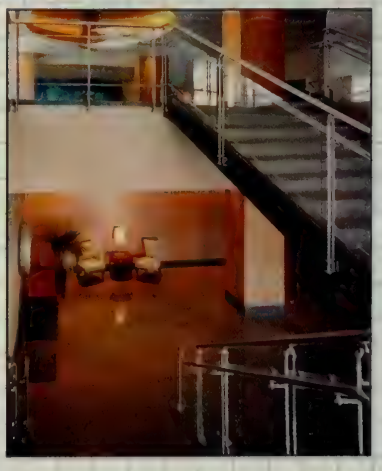
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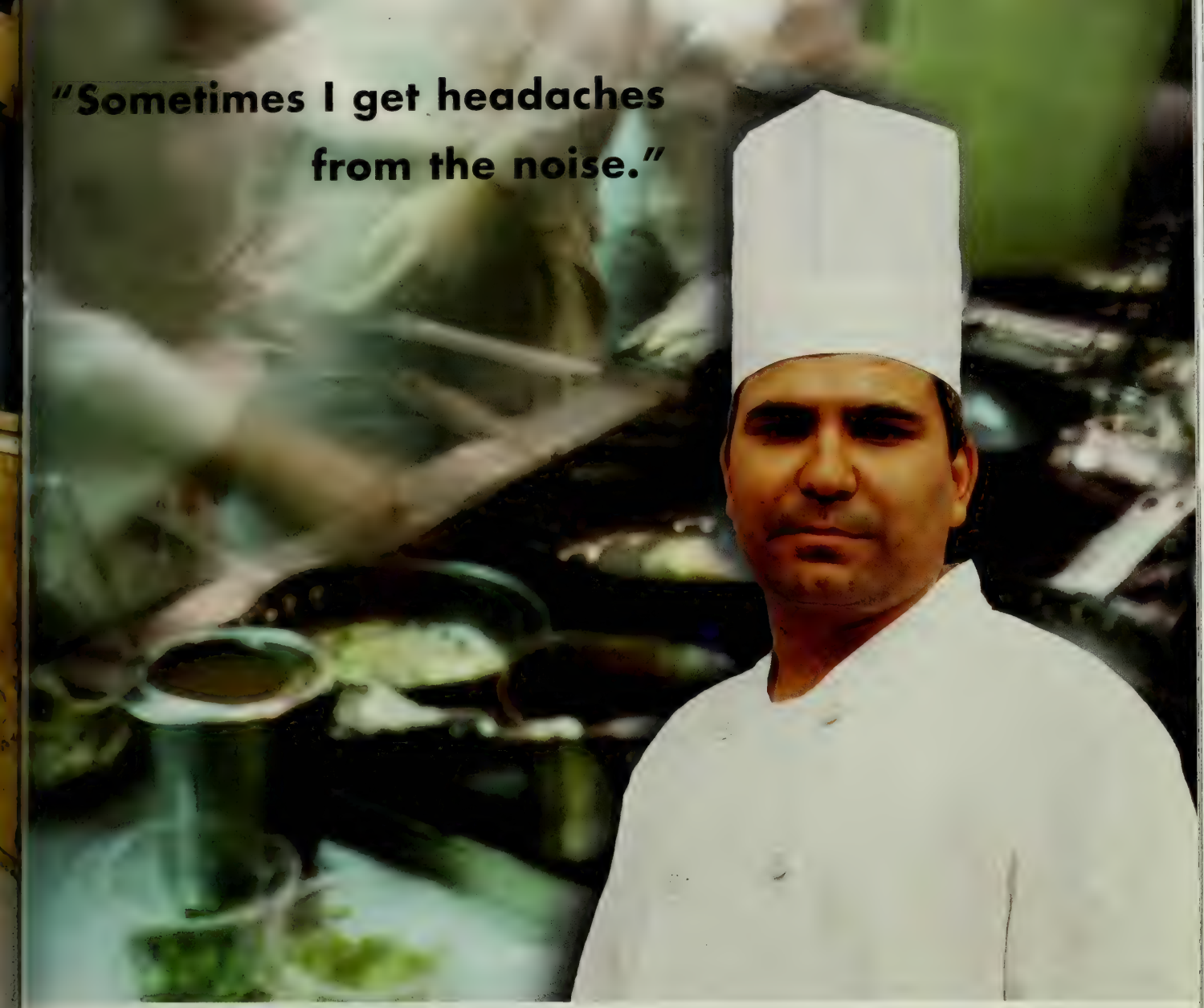
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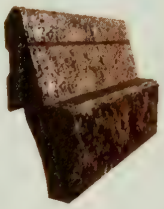
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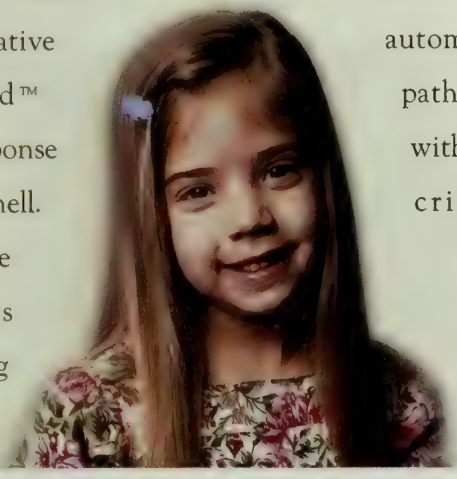
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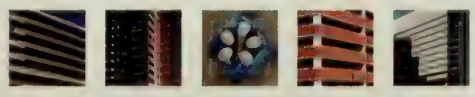
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HEALTH CARE

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By Nancy B. Solomon, AIA



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2.
Vancouver, British Columbia
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3.
Graz, Austria
Domenig/Eisenköck/Gruber allow patients at a new hospital to enjoy glimpses of surrounding fields.



4.
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Construction activity in the health-care sector is alive and well. According to F.W. Dodge, $16 billion was spent on health-care facilities in 2002, making the sector the fourth-largest market by dollar value of nonresidential construction, and the figure is expected to rise to $19.59 billion by 2009. Aging facilities are one of the reasons this market has stayed robust. "A lot of hospitals were built around World War II and will therefore have to be renovated or rebuilt soon," says Stacy Malkan of Health Care Without Harm (www.noharm.org), in Washington, D.C., a coalition of health-care facilities and medical professionals that strives to make the industry environmentally friendly. In some cases, legislation and growth drive the trend. In California, where the population is expected to grow by 9.3 percent between 2002 and 2008, Senate Bill 1953 has mandated that all health-care facilities comply with stricter seismic requirements by 2030, setting in motion a huge overhaul of hospitals throughout the state.

Increasingly, the forms of new facilities reflect not only the science but also the art of the healing professions. Hospital design, like medicine, has been in a state of evolution over the past few decades. "Medical science was grossly inadequate before 1900," says Roger S. Ulrich, a professor of architecture at Texas A&M University. If the infirm made it to a hospital, "the odds of getting better were lower than the odds of getter worse," he explains. Instead of medicine, the ill relied on "mind-body interventions"—family, spiritual support, views of nature and art—to distract them from pain and to limit stress while their bodies struggled to heal.

The odds for patients began to improve in the early 1900s. Penicillin was isolated in 1928 and widely used by the 1940s; this so-called "wonder drug" finally gave the medical profession a dependable weapon with which to fight many illnesses. Diagnostic equipment multiplied, and surgical procedures became more and more sophisticated by the mid-20th century, at which time hospitals became essentially platforms for numerous space-consuming tools. Infection reduction and procedural efficiency were now the controlling factors in health-care design, leading to stark, artificially lit, institutional structures filled with high-tech machinery and organized according to critical adjacencies. Natural light, which was an anathema to many of the new tools and procedures, was severely limited, and as a consequence, so were views to the outdoors.

Nancy B. Solomon, AIA, writes frequently about architectural technology. This past August, RECORD *ran her story about environmentally friendly health-care facilities.*

While reliance on critical diagnostic and treatment methods has never waned, another sensibility began to emerge in the late 1970s and early 1980s. Rosalyn Cama, an interior designer in New Haven, Connecticut, and chair of the board of directors for The Center for Health Design, a nonprofit group based in Concord, California (see below), in part credits expectant mothers who demanded homelike, less-clinical settings for labor and delivery. Hospitals, which were entering a more competitive period financially, responded by building birthing centers with residential-style furnishings and accommodations for family members. This new business atmosphere gave rise to what Cama calls "the hotel look" in hospitals: Administrators reasoned that if potential patients preferred well-appointed maternity wings, it would be worthwhile to spiff up their lobbies as well.

It was around this time that the nonprofit group Planetree (www.planetree.org) was founded in Derby, Connecticut. Named after the type of tree beneath which Hippocrates is said to have taught his students, Planetree promotes humane medical experiences that empower patients and their families through education, partnership with health-care providers, and nurturing environments. Similarly, The Center for Health Design (www.healthdesign.org), founded several years after Planetree, has a mission to improve the quality of medical care through evidence-based design research, which aims to determine how the built environment influences inhabitant behavior, psychosocial characteristics, and in the case of health care, therapeutic outcomes.

Since the mid-1980s, evidence-based research has consistently demonstrated that facility design can indeed affect the healing process. In 1984, A&M's Ulrich undertook a study in which patients in rooms with views of nature recuperated faster and reported feeling better than those whose windows looked onto the brick walls of an adjacent building. More recent clinical studies by Ulrich, as well as other research teams at hospitals in the U.S. and abroad, indicate that stress can be significantly and quickly reduced if patients look at scenes of nature and certain types of visual art. In a matter of minutes, if not seconds, positive emotions increase and key stress indicators such as blood pressure, heart rate, and respiration rate decrease. And scores of medical studies indicate that lower stress levels are associated with both enhanced immune function and less incidence of pain.

If these data weren't enough to encourage health-care administrators to pay attention to hospital designs, three other forces have strengthened their resolve. First, a growing shortage of medical professionals has motivated hospitals to overhaul their facilities as a method of attracting and retaining top-notch staff. Second, a greater sensitivity to the needs of local communities, from which hospitals draw much of their clientele and support, has made them reexamine their physical presence.

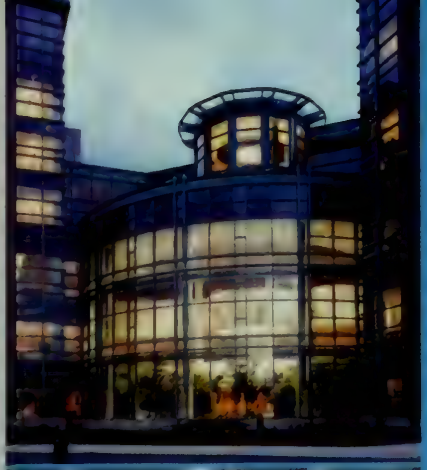








Anshen + Allen's Dixie Regional Medical Center in St. George, Utah (top two), features an entry warmed by southwestern light, and materials such as wood and local stone, to create a more welcoming atmosphere for patients than the sterile hospital ward of yore. Guenther 5 Architects has also given hospital interiors a residential feel at the Continuum Center for Health and Healing (bottom left) and the Beatrice Renfield Center for Nurses (bottom right), both at Beth Israel Medical Center in New York City.





A prominent entry with generous glazing, as well as an interior healing garden, are standout features of the new campus for the Bronson Methodist Hospital in Kalamazoo, Michigan, designed by Shepley Bulfinch Richardson & Abbott (left two). At St. Luke's Community Medical Center in The Woodlands, Texas (right), by HGA, an outdoor healing garden and landscaped terraces allow patients and families to enjoy natural surroundings or simply a breath of fresh air.



Finally, growing interest in a health-driven understanding of sustainable design [RECORD, August 2004, page 179] has emboldened clients, architects, and product manufacturers to search for ways to introduce natural light and alternative materials into the hospital setting, not only to save energy and reduce toxic emissions but also to revitalize occupants.

There are many contemporary examples of the convergence of these trends. Kaiser Permanente, the largest health-care provider in California, recently enlisted the two-firm team Chong/SmithGroup to develop a "template" for its hospitals in the state; they asked the architects to emphasize patient-friendly details such as extensive glazing and inviting, open entries and circulation spaces. Healing gardens, a natural escape from the often-harsh realities of hospital wards, have also gained popularity. Artist and garden designer Topher Delaney, principal of Seam Studios in San Francisco, has been credited with pioneering this trend; it began when she was diagnosed with breast cancer in 1988 and sought a place of solace at the hospital where she'd received the news.

Designers have also begun working hand-in-hand with medical researchers to determine how their buildings affect health and well-being. In 2000, for example, The Center for Health Design began teaming up with health-care providers in an effort called the Pebble Project. The scope of the project varies with each provider, ranging from medical outcomes and length of stay to employee turnover, but the aim is to document examples of health-care facilities "whose design has made a difference in the quality of care and financial performance of the institution." And the Academy of Neuroscience for Architecture was established by the AIA's San Diego chapter at the institute's national convention in 2003, at which time it received a $100,000 Latrobe Fellowship to study the relationship between the brain and the built environment.

So we've managed to spiral upward, coming full circle on a higher plane. With more sophisticated equipment and knowledge, scientists suggest that the mind-body interventions of an earlier age still play an important role in medicine today. While the conventional concerns of infection control and functional efficiency must still be addressed, designers must pay attention to the psychological and emotional needs of not only patients but also families and staff members, who can provide better care if they have opportunities to nourish themselves as well.

The four projects included in this month's Building Types Study illustrate this trend toward hospitable hospitals. They lighten the spirit with joyful, life-affirming gestures such as generous daylight, bright color, playful forms, elegant detailing, artwork, and access or views to nature. Architects would do well by examining these efforts and taking heed of the growing movement toward patient-focused care. Based on current forecasts, this sector will be offering significant opportunities for design professionals in the foreseeable future. ■

Maternity and Pediatrics Hospital
Madrid

1

RAFAEL MONEO COMBINES TWO HEALTH-CARE FACILITIES UNDER ONE ROOF, CRAFTING AN URBAN OASIS OF CRISP, SHIMMERING VOLUMES.

By David Cohn

Architect: *Rafael Moneo—Rafael Moneo, principal; José María de la Mata, collaborator; Belén Hermida, project architect; Oliver Bieniussa, Rafael Beneytez, Carmen Díez Medina, Jacobo García-Germán, José María Hurtado de Mendoza, Fernando Iznaola, Francisco Padilla, Borja Peña, Sandra Pérez-Nievas, Pablo Perlado, Juan Rodríguez Villa, Christoph Schmid, Tara Solomon, Veronika Weisner, project team*
Client: *Leases and Developments of the Community of Madrid*
Owner: *Public Health Administration, Regional Government of Madrid*
Engineers: *Jesús Jiménez Cañas and Eduardo Gimeno Fungairiño (structural); Rafael Úrculo Aramburu (mechanical)*
Consultants: *Carmen del Pino (graphic design)*

Size: *500,000 square feet*
Cost: *$153.3 million*
Completion date: *September 2003*

Sources
Glass facade: *Saint Gobain*
Curtain wall: *Folcrá*
Cast aluminum: *Fundiciones Ros*
Aluminum screen: *Llambí*
Granite: *Granil Ouro*
Marble: *Luis Sánchez Díaz*

For more information on this project, go to Projects at **www.architecturalrecord.com.**

According to Rafael Moneo, who designed the Gregorio Marañon Maternity and Pediatrics Hospital in Madrid with specialist José María de la Mata, a hospital "should be clear, clean, and luminous. It should have the logic one expects from science for those who, in sickness, seek its aid. It should offer patients and their families every convenience. It should create an atmosphere of calm, tranquillity, and rest. And it should reflect in all its elements the value of hygiene for health." To achieve these goals, Moneo and De la Mata's design relies on the logic of a gridded circulation plan and the calming, cleansing effect of natural light, which descends from eight courtyards into all the rooms and corridors, and which is reflected from its pearly glass facades.

Program

The building is part of the multiblock campus of Gregorio Marañon, a major public teaching hospital in central Madrid. Moneo was brought into the project to help renovate the aging complex, an accumulation of buildings dating from the early 20th century to the 1980s. The 500,000-square-foot, seven-story facility, developed in close collaboration with doctors and staff, replaces the obsolete maternity hospital on the same site. It combines the functions of two independent but related institutions. Each has its own entrance, emergency room, operating rooms, outpatient facilities, and beds; only diagnostic facilities and general services are shared.

David Cohn is a RECORD *contributing editor based in Spain.*



PHOTOGRAPHY © DUCCIO MALAGAMBA, EXCEPT AS NOTED

Solution

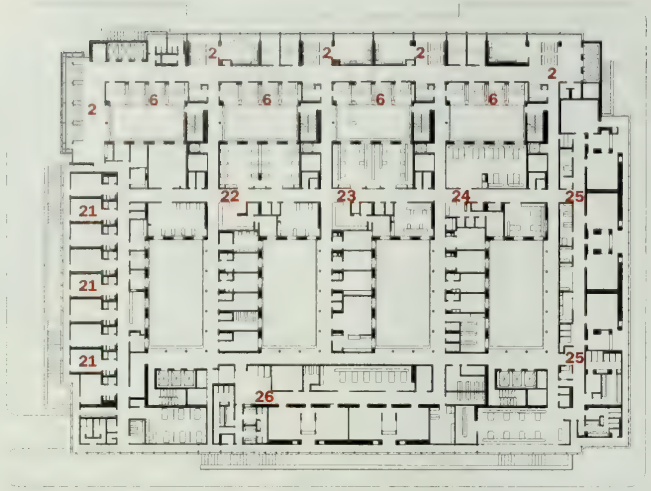
The design for the building springs from its urban situation. Its site was part of a superblock that Moneo broke up to facilitate circulation through the complex, restoring two suppressed streets. Obsolete buildings will be cleared from the center of these blocks to create a central plaza with a parking garage below, flanked on its two long sides by restored brick pavilions from the 1920s. The Maternity and Pediatrics Hospital occupies an entire block at the southern end of this plaza.

Taking advantage of a 10-foot difference in grade, Moneo created two "ground floor" entries for maternity and pediatrics, the latter one story above the former, on opposing diagonal corners. Ramps on a third corner bring ambulances to a below-grade court serving pediatrics and maternity emergency areas. Outpatient services are located on each of the ground floors; operating rooms, birthing rooms, and prenatal units on the floor above them; and X-rays, labs, and diagnostic services on the lower "emergency" level.

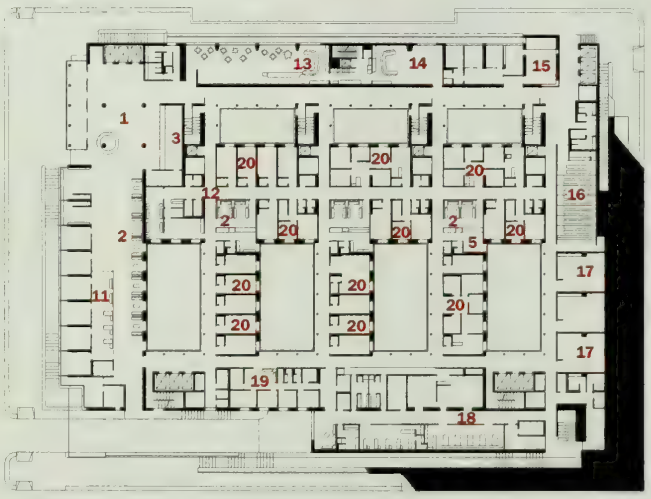
The courtyard plan was developed to isolate patients and users from what Moneo terms the "hard and aggressive" urban surroundings. Through the careful positioning of the lobbies and the elevator banks



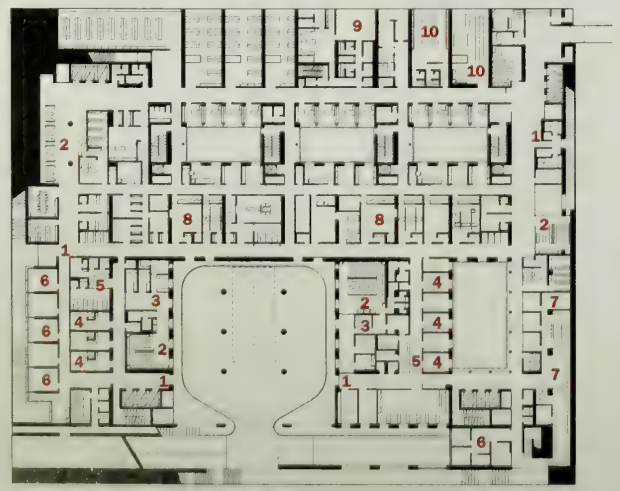
Prominent signage at the opposite-corner entries (opposite and this page), amplified by strong massing and cleanly limned materials, lends the hospital an engaging street presence.



SECOND LEVEL



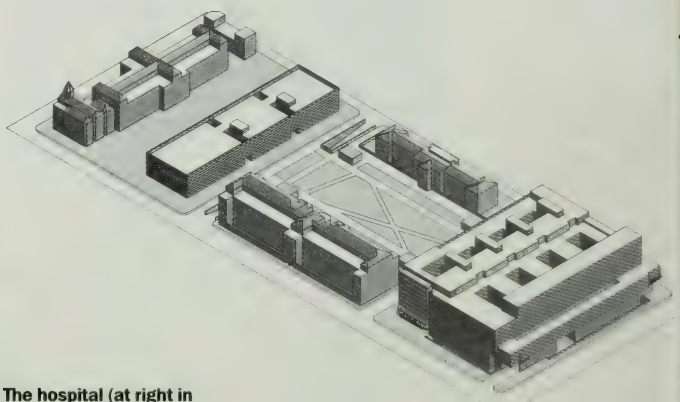
GROUND LEVEL



BASEMENT

N ← 0 20 FT. 6 M.

1. *Entry*
2. *Waiting room*
3. *Admissions*
4. *Emergency treatment*
5. *Nurses' station*
6. *Medical unit office*
7. *Laboratory*
8. *MRI room*
9. *Kitchen*
10. *Security*
11. *Administration*
12. *Blood testing*
13. *Public cafeteria*
14. *Staff cafeteria*
15. *Chapel*
16. *Lecture hall*
17. *Classrooms*
18. *Outpatient surgery*
19. *Fertility laboratory*
20. *Consultation*
21. *Delivery room*
22. *Neonatal unit*
23. *Neonatal intensive care*
24. *Pediatric intensive care*
25. *Pediatric surgery*
26. *Ob/gyn surgery*



The hospital (at right in rendering above) anchors a tightly bound urban superblock. Glazed corridors look onto an interior courtyard (below).





Orthogonal volumes pulled from the main structure, along with the horizontal mullions, break up the building's large mass and help integrate it into its urban surroundings.

on each of the four corners, the apparently open grid of corridors has been calibrated to segregate public and staff, who access patient rooms from two opposing perimeter corridors. Transverse corridors feed between these perimeter accesses to the nurses' stations and patient rooms, which are grouped around the courtyards in the building's center. Patient rooms line only two sides of each court, so they can overlook the activity of the corridors on the opposite sides.

Patient rooms feature planes of vivid color, custom-designed furniture, and interior maple shutters that offer privacy and a domestic air. Maternity rooms include a rocking chair for mother and baby. Like the furniture in the waiting areas, Moneo's design of chrome tubing and white upholstery has the ele-



Sunlight brightens an interior of clean, calming whites and neutrals (this page). The interior courtyards permit glimpses throughout the building, creating a sense of community despite the hospital's size (opposite).



gant beauty of classic Bauhaus pieces. Corridor floors and wainscoting are of white marble, with recessed strip lighting and metallic acoustical tile for the ceilings.

Moneo developed the building's spectacular glass skin from the tilted glass prisms of his Center Kursaal in San Sebastián, Spain [RECORD, May 2000, page 212]. The glass forms the outer layer of a ventilated cavity wall and is supported by horizontal aluminum mullions. Its soft, creamy surface is created by an inner layer of sandblasted, mirror-backed glass. The glass doesn't reach the ground; a wainscoting of cast aluminum panels clads the retrenched lower floors, while perimeter light courts for the basement levels are clad in granite. The glass and aluminum make the hospital's crisply modeled volumes glow and sparkle amid the grim brick buildings that surround it, giving it, as Moneo comments, the air of lightness, precision, and hygiene one expects of a medical instrument.

Commentary

As in many of his buildings, Moneo's design goes beyond functional and formal issues to identify more fundamental and elusive concerns—in this case, how the building can help spiritually as well as practically in the work of caring for patients. He conceived the hospital, like the monasteries that the courtyard typology derives from, as an all-embracing environment, withdrawn from the outside world and focused around its courts and corridors: an autonomous, protected community of order and light. ■


HOT

Children's Hospital, Ambulatory Care Building
Vancouver, British Columbia, Canada

2

HENRIQUEZ PARTNERS AND THE IBI GROUP MITIGATE CONCRETE'S TOUGH SIDE WITH BRIGHT COLOR AND WARM MATERIALS FOR A CHILDREN'S CLINIC.

By Rhys Phillips

Architect: *Henriquez Partners/IBI Group (design architects)—Richard Henriquez, partner in charge, design; David Thom, partner in charge, management; Ivo Taller, project architect; Ron Eagleston, Yijin Wen, Frank Stebner, Raj Nath, Julianne Kennedy, Jaime Dejo, Marc Bouille, Peter Willemse, design team; Karlsberger Associates (associate architect)—Mike Tyne, AIA, Ken Redmond, AIA, Jane Holden, AIA, design team*
Client/owner: *Children's and Women's Health Centre of British Columbia*
Engineers: *Read Jones Christoffersen (structural); Stantec Consulting (m/e/p)*
Consultants: *Juli Hodgson Design (interiors); Durante & Kreuk (landscape)*
General contractor: *PCL Constructors Canada*

Size: *115,000 square feet (new); 6,500 (renovation)*
Cost: *$17 million*
Completion date: *January 2002*

Sources
Concrete: *Ocean Concrete*
Built-up roofing: *Soprema*
Steel: *Eagle Iron*
Glass: *Midway Glass and Aluminum*
Painting: *M&L Painting*

For more information on this project, go to Projects at www.architecturalrecord.com.

Squeezed between snow-capped mountains, Juan de Fuca Strait, and the Fraser River delta, Vancouver has one of the world's premier urban settings. While it boasts a mild, largely benign climate, it can be plagued by long periods of cloudy, wet weather. This suggests a climate ill-suited to the raw concrete architecture of Brutalism. Over the past decade, however, the work of Henriquez Partners has presented a strong argument for the appropriateness of bold concrete forms in urban Vancouver, with projects like the Coal Harbour Community Centre and two recent award-winning social housing projects. The firm's Ambulatory Care Building (ACB) on the British Columbia Children's Hospital campus (a joint effort with IBI Group and Karlsberger Associates as associate architects) succeeds on a tight budget in creating a bold but welcoming facility for young patients.

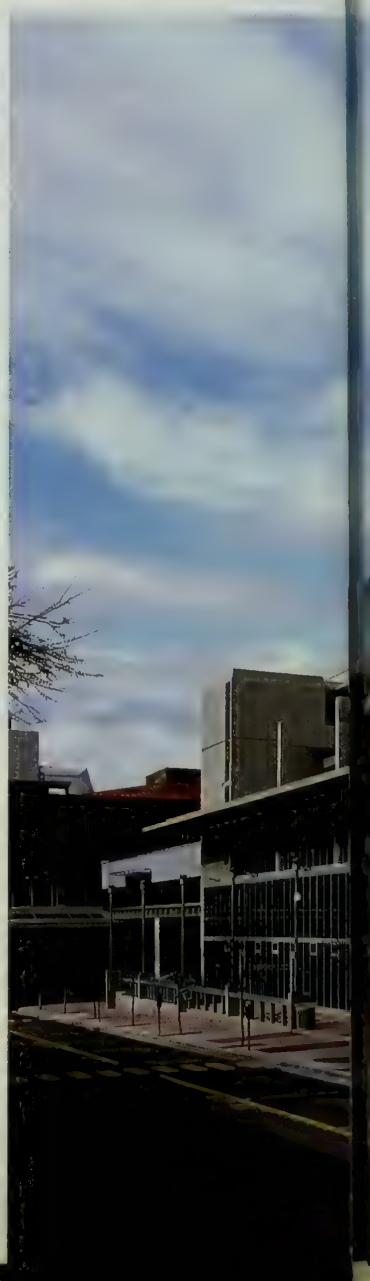
Program

ACB replaces the demolished north wing of the Children's and Women's Hospital, a sprawling single-building complex with mazelike interior spaces that render its wayfinding, fresh air, and sunlight features "not very good" according to partner in charge Richard Henriquez. The hospital's long-term program calls for smaller buildings, assembled with other nearby medical facilities into a campuslike setting using streets and landscaped quadrangles. A primary objective for the new, 115,000-square-foot facility, which provides outpatient pediatric services for 66,000 visitors annually, was to create a bright, welcoming environment for children and their parents. With more than 50 clinics required for nearly 30 specialties, treatment and procedure rooms had to be flexible enough for different disciplines to utilize them at different times of the week.

Solution

ACB is a modestly scaled building connected to the main complex by a glazed bridge on the second level. Henriquez stretched the four-story structure along a pleasant new street lined with trees, lanterns, and outdoor seating. Its animated south-facing public facade emphasizes transparency with a double-height, glass-fronted concourse shielded by an impressive concrete canopy that minimizes solar gain. "The relatively narrow floor plate made up of two rectangles of different lengths maximizes the penetration of natural light from Vancouver's fickle sunshine," says Henriquez.

Functionally, the floor plate is programmed into three horizontal and two vertical zones. On the first



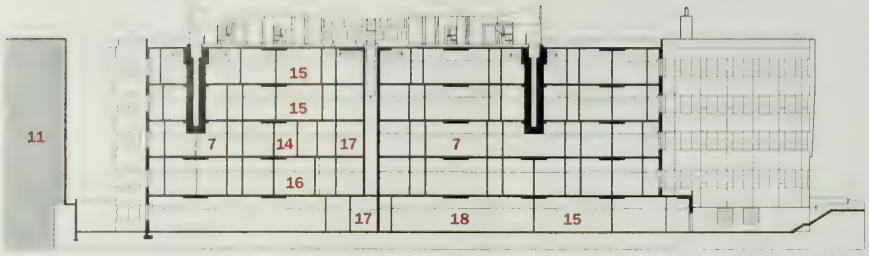
Rhys Phillips has been writing about Canadian architecture for the past two decades. In 2003, he was inducted into the Royal Architectural Society of Canada as an Honorary Fellow.

A glazed walkway (near right) connects ACB to the existing hospital (lower left in photo below). Canopies over entries and windows prevent heat gain (far right). The concourse (below) is pushed forward from the main volume, its columns extruded upward to create flying-buttresslike arches that obviate the need to introduce additional columns on the main floor.







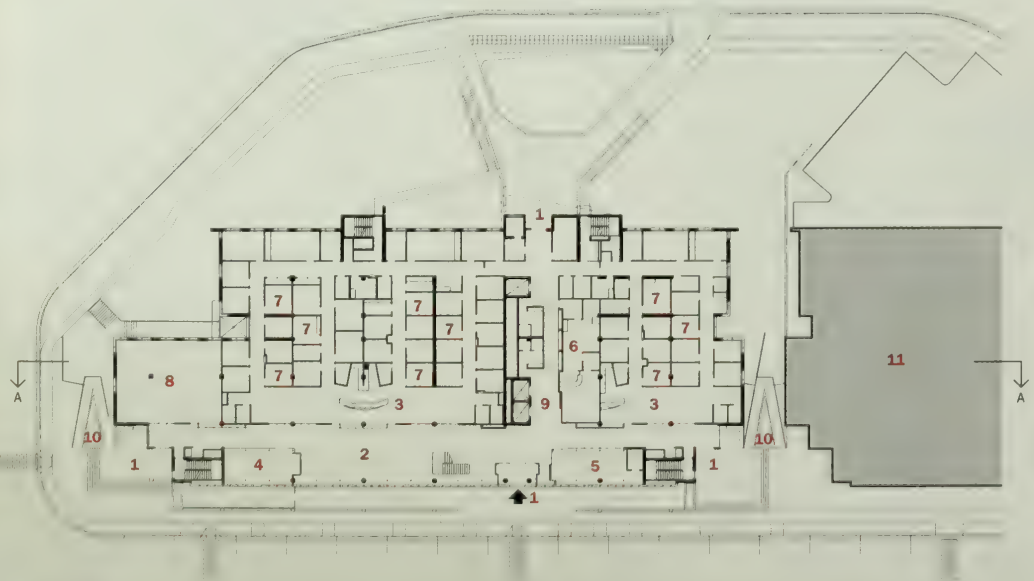


SECTION A-A

1. *Entry*
2. *Concourse*
3. *Reception*
4. *Day care*
5. *Gift shop*
6. *Pharmacy*
7. *Clinical office*
8. *Dentistry*
9. *Service core*
10. *Access ramp*
11. *Future phase*
12. *Bridge to existing hospital*
13. *Public corridor*
14. *Patient library*
15. *Conference room*
16. *Examination room*
17. *Restroom*
18. *Server room*



SECOND LEVEL



GROUND LEVEL

two levels, the bright, open concourse serves as the patient reception zone. The clinic zone, stretched along the center of the floors and organized as a series of three "pods" on each floor, is immediately visible and color-coded to ensure quick orientation. A third, private zone occupies the north side of the building and contains case preparation rooms. Patient files are stored in this zone, transferred each morning from doctors' offices located on the third and fourth floors. These narrow upper floors boast extensive north- and south-facing glazing. Additional overhangs, along with tinted, slightly reflective glass and operable windows, help the non-air-conditioned building achieve an estimated 50 percent energy savings over similar conventional buildings.

In keeping with current hospital design practice, according to project architect Ivo Taller, the treatment rooms were kept generic and unprogrammed. "Each one contains digital imaging equipment, a pedestal sink with sensor-operated faucets, and a standard examining table—but they're intended to be multifunctional so they can be in constant use," he says.

Despite a modest budget, Henriquez says, "We wanted to up the architectural quality of the typical hospital, and we found it cheaper to build in concrete, where the structure and the cladding are the same." A special seal was used on the concrete to prevent it from turning dark and streaky when wet, not a small matter in a city where it rains 197 days a year.

Commentary

ACB's south elevation, with its tension between competing vertical and horizontal forms and structures as well as between concrete solids and glazed voids, provides a robust and transparent public facade. Inside, public areas are spacious, uncluttered, and filled with natural light—all helped along by crisp detailing in metal, glass, and wood, and softened by touches of bright color. ■

An open stair of glass, metal, and wood (near right) provides access from the ground floor to clinical offices on the second level. Color coding of the clinic spaces (far right and below) simplifies wayfinding in a facility housing a wide variety of specialists.







Provincial Hospital Graz-West

Graz, Austria

3

DOMENIG/EISENKÖCK/GRUBER WELCOME DAYLIGHT AND FRESH AIR INTO A PUBLIC HOSPITAL WITH AN UPSCALE FEEL IN A SPECTACULAR LANDSCAPE.

By Liane Lefaivre

Architect: *Domenig/Eisenköck/Gruber—Günther Domenig, Hermann Eisenköck, Rupert Gruber, design principals; Johannes Dullnigg, project manager*
Client/owner: *Steiermärkische Krankenanstalten Gesellschaft*
Engineer: *Fritsch, Chiari & Partner*
Consultants: *Land in Sicht (landscape); Gerhard Düh (fire protection); Erwin Wagner (building services)*

Size: *335,800 square feet*
Cost: *$99 million*
Completion date: *August 2002*

Sources
Structural system: *Steiner Bau*
Metal/glass curtain wall: *Morocutti Stahlbau; Metallbau Heidenbauer*
Concrete: *Andreas Sauritschnig*
Aluminum: *Schüco International*
Insulated panels: *Eckelt Glas*
Fire doors: *TorTec Brandschutztor*
Acoustical ceilings: *Lindner*
Cabinetwork/custom woodwork: *Stoisser Objektmöbelproduktion*
Elevators/escalators: *Kogler*
Interior ambient lighting: *Kreon*

For more information on this project, go to Projects at www.architecturalrecord.com.

Josef Hoffmann's Pruckersdorf Sanatorium of 1904 was a functional and aesthetic masterpiece that might have set a precedent for hospitals in Austria—but didn't. Throughout the 20th century, Austrian hospitals fared perfectly well without architects' architects. Today, the country not only has the most hospitals per capita in the European Union, it also boasts the highest international ratings, along with France, in health-care quality. Recently, however, the climate for public hospital construction has shifted. State facilities are now competing for patients who have opted for new, private supplementary insurance, and simultaneously, the national hospital service hired a slew of project managers tasked with keeping construction strictly on budget. The grand new public building at Provincial Hospital Graz-West, designed by Domenig/Eisenköck/Gruber, should convince both patients and administrators that the public system in Austria is entirely capable of delivering top-notch hospitals cost-effectively.

Program

As part of an effort to provide smaller, decentralized health-care facilities throughout the region, the

Liane Lefaivre is the chair of the History and Theory of Architecture Department at the University of Applied Arts in Vienna.



The architects conceived the wings as low volumes of steel, glass, and concrete, scaled to harmonize with surrounding fields and distant hills. Separate components of the facade, clad in differing materials, push and pull against one another, creating an impression of quiet drama (right and below).









In a nod to nature's healing powers, the architects placed patient rooms along the perimeters of each wing (top); some even have balconies (bottom). Brushed metallic louvers (at right in bottom photo) prevent excess heat gain and minimize the need for air-conditioning.

program called for outsourcing short-stay, basic-care services—such as emergency surgery, physiotherapy, radiology, internal medicine, same-day surgery, and lung disease treatment—away from the larger University Hospital in Graz, located in the eastern part of the city. The new building's site in Graz's western outskirts consists of wheat and corn fields, with a few rustic buildings in the distance and hills as a backdrop, all set against a vista of open skies.

Solution

The three-story, 260-bed hospital smacks of luxury. Approaching it, a visitor can't help thinking it's not a hospital, but rather a home-furnishings shopper's paradise, recalling Ben Thompson's famed Design Research Building in Cambridge, Massachusetts. Nighttime heightens this impression, thanks to the brilliant (literally and figuratively) use of artificial lighting, both inside and out. The facades of buffed, meshed, and ribbed stainless steel, as well as concrete structural elements and finishing, are impeccably crafted and detailed, giving an impression of state-of-the-art technology within.

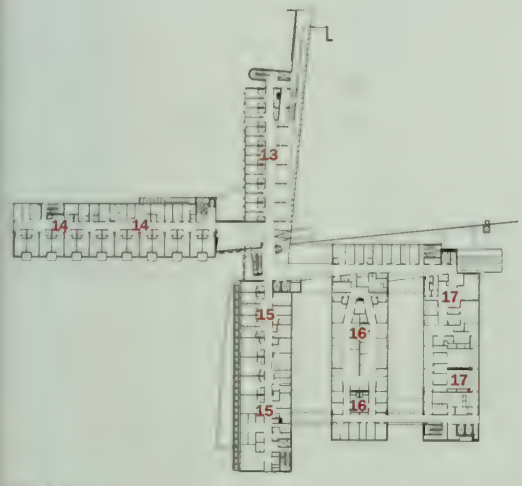
Roughly cross-shaped in plan with a hub-and-spoke logic, the hospital comprises a centrally located lobby, three patient wings, and a fourth wing that houses operating and recovery rooms, along with the emergency services area, radiology department, and parking garage.

Inside, visitors enjoy a sense of abundant air, space, and light. The spacious quadruple-height lobby has a coolly luminous northeastern orientation. Hans Kupelwieser's bright red plastic sculptures (all public facilities in Austria have an art budget) boost its upscale design patina.

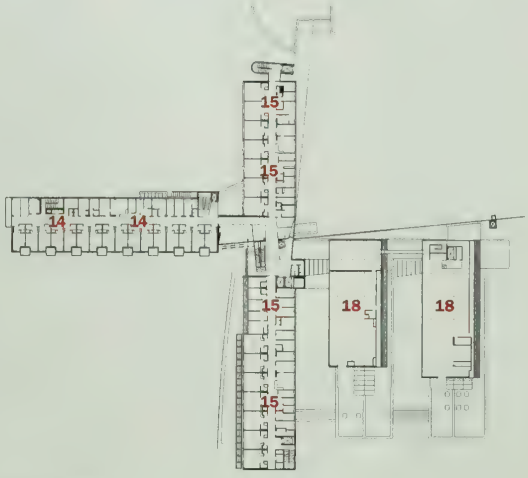


SOUTHWEST ELEVATION

0 50 FT.
15 M.

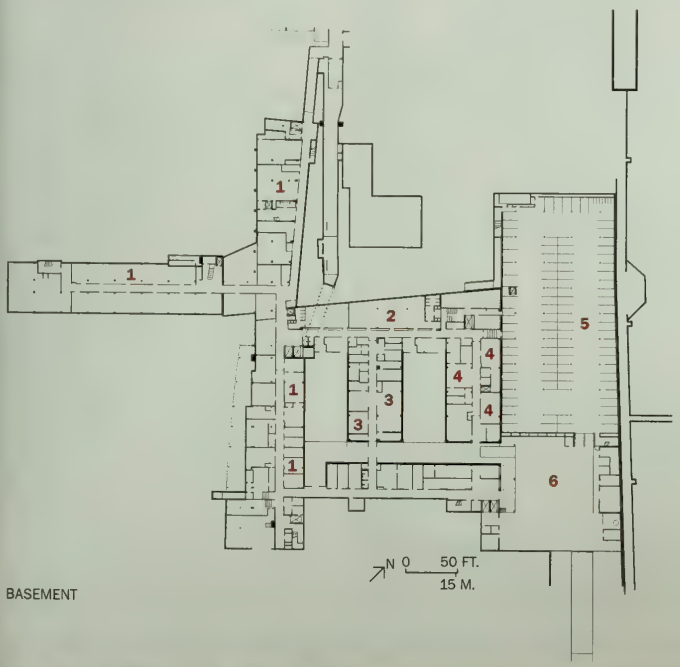


FIRST FLOOR



SECOND FLOOR

1. *Equipment/stockroom*
2. *Laundry/wardrobe*
3. *Pharmacy*
4. *Stockroom*
5. *Parking*
6. *Delivery area*
7. *Main entry*
8. *Administration*
9. *Dining hall*
10. *Outpatient services*
11. *Radiology*
12. *Pathology*
13. *Readiness rooms*
14. *Patient wing (private)*
15. *Patient wing (public)*
16. *Intensive care unit*
17. *Operating rooms*
18. *Equipment area*



BASEMENT



GROUND FLOOR







Designer furnishings lend an upscale aura to a simple waiting area (above). Sculptures adorning the entry (right) were modeled on red blood cells. Generous glazing brings daylight into visitor rooms and public seating areas (opposite and this page, top).

Partitions in the reception area, including the elevator shafts, are made of glass, whether clear, tinted, or frosted. Even the ends of the corridors parallel to the long axes of each wing are glazed, so that neither patients nor staff ever lose sight of the bucolic outdoors. The architects used metallic louvers outside and oriented the building to minimize the need for air-conditioning. Natural cross ventilation in the patient wings adds to the delight of abundant natural lighting.

Spaces for medical staff and services are located on the street side of the hospital, reserving the superior outdoor views for patients. Rooms in the public-sector wings accommodate four patients each and are equipped with refrigerators, cloaked in sleek, pear-wood veneer consoles, as well as bathrooms with glazed partitions and fixtures worthy of high-end Milan apartment buildings. The shorter wing for patients with private insurance, which extends perpendicularly toward the back of the building, is even more sumptuous. Rooms are generally single or double occupancy, with outdoor balconies big enough for a few chairs. Visitors and patients can relax in visiting rooms at the far end of the corridor, which boast designer furniture and sweeping views of the fields and hills.

Commentary

Hospital administrators report that the new building is highly functional. Moreover, the director remarks that, in spite of its well-appointed appearance, the project didn't exceed its budget by one euro cent. Its cost-effectiveness, combined with abundant natural light and ventilation, luxurious materials, and site friendliness, make this no ordinary hospital. Domenig/Eisenköck/Gruber had already proved its credentials with the public hospital in Bruck an der Mur (1987–94), but this project has raised the bar further, setting new functional and aesthetic standards for patient well-being. ■



Naval Hospital
Bremerton, Washington

4 **NBBJ EVOKES THE FORM OF A NAUTICAL QUARTERDECK FOR AN ATRIUM THAT CONNECTS A NEW FAMILY-CARE WING WITH AN EXISTING HOSPITAL.**

By John Pastier

Architect: *NBBJ—John Pangrazio, FAIA, partner in charge; Richard Dallam, AIA, design principal; Charles Kolb, project manager; Jerry Yin, Wayne Hiranaka, Robert Dooley, Cam Allen, Andris Lapins, Angel Fernandez, Duane Jonlin, Gretchen Harriott, Michael Gale, Amy Baker, Catherine Farrington, Thomas Bender, Don Schuman, Kimball Bergerud, Jay Halleran, Laurel Rech, Taylor Simpson, Brodie Bain, Carl Tully, Stephen Bettge, Ross Leventhal, Noel Whorton, project team*
Client: *U.S. Navy*
Consultants: *Magnusson Klemencic Associates (structural/civil engineer); Notkin (mechanical engineer); Sparling (electrical engineer, lighting); Anderson & Ray with Kathryn Gustafson (landscape)*

Size: *126,800 square feet*
Cost: *$24,885,220*
Completion date: *October 2001*

Sources
Curtain wall: *EFCO*
Glazing: *Hartung Glass Industries*
Doors: *RACO; VT Industries; WON Door; Total Door*
Hardware: *Falcon; Norton; Monarch*
Acoustical ceilings: *USG*
Resilient flooring: *Armstrong; Mannington*

For more information on this project, go to Projects at www.architecturalrecord.com.

As it is in the civilian world, health care in the military is a growing enterprise that requires facility expansion to keep pace with demand. The armed services clientele doesn't differ much from the larger population, since spouses, children, and retirees are provided with care. Similarly, military facilities are incorporating the amenities and consumer values found in the larger universe of American health care. NBBJ's addition to the Bremerton Naval Hospital, in Washington, one of about 20 U.S. Navy hospitals around the world, embodies these values and is a model for future planning. It consists of a new family-care outpatient clinic attached to an older, more traditionally conceived hospital. Located in a nearly rural zone on the western fringe of metropolitan Seattle, the hospital serves 60,000 military families in Washington and Oregon.

Program

The 63,200-square-foot addition expands a 250,000-square-foot naval hospital built in 1980, which occupies a gently sloping wooded site on Washington's Kitsap peninsula, overlooking Puget Sound's Ostrich Bay. The new building contains family-care clinics comprising 66 exam rooms, seven procedure rooms, and 32 medical offices; a pharmacy; three large waiting areas; and a new entry joining the old and new buildings. Support functions include medical-records storage, a wellness center, staff lounges, and an allergy/immunization clinic. NBBJ also partially renovated the older hospital. Among the project's goals were creating a patient-focused healing environment, a pleasant work space, clarity of circulation, integration with the natural context, expression of naval motifs and traditions, and sustainability within a tight budget of $200 per square foot.



Solution

Early in the design process, NBBJ persuaded the Navy to modify its existing campus master plan to enable expansion parallel to the shoreline, rather than in an inland direction, to

John Pastier is a Seattle-based architectural writer whose work has been published in the U.S. and abroad.

A glass-walled atrium (below) connects the new wing (opposite) with a partially renovated 1980s hospital. A "healing garden" conceived by landscape designer Kathryn Gustafson meanders through part of the forested site to the south of the clinic (plan, right).

1. *New clinic*
2. *Existing hospital*
3. *Entry plaza*
4. *Quarterdeck*
5. *Healing garden*
6. *Parking entry*
7. *Underground parking*
8. *Existing parking*
9. *Ostrich Bay*







FIRST LEVEL



SECOND LEVEL

1. *Main entry*
2. *Secondary entry*
3. *Access to existing hospital*
4. *Quarterdeck*
5. *Waiting room*
6. *Resource center*
7. *Classroom/education*
8. *Pharmacy*
9. *Patient records*
10. *Offices*
11. *Mechanical/service*
12. *Clinic rooms*
13. *Staff lounge*
14. *Bridge*





The maple flooring of atrium bridges and stairs recalls ship decking and is painted white to pay homage to Navy whites, the service's dress uniform (above). Towering curtain walls offer light and views to clients waiting in the new family clinic wing (left).

preserve a wooded hillside and afford the new building views of the bay. Helping to preserve the site further, a multilevel underground garage provides protection from the elements in the rainy climate and can also serve as an emergency shelter.

The key visual motif of the complex is a glass-walled atrium, dubbed the "quarterdeck"—a Navy term for the main entry area of a ship or a command, usually decorated with flags and serving ceremonial as well as circulatory functions. Here, the quarterdeck acts as a "knuckle" joining the old hospital with the new clinic by means of freestanding, intricately detailed steel stairs and second- and third-story bridges that float within a spacious three-story volume.

"Externally, this concept grew out of the form of an aircraft-carrier control tower—'the island', in Navy parlance," says NBBJ project designer Jerry Yin. "Internally, the bridges and stairs are like a ship's catwalks."

The clinic wing is organized on a 30-foot-by-30-foot planning module and displays an impressive clarity, considering the more than 200 cubicles and functional subdivisions required by the program. The linear waiting areas, extending the full length of each floor, have generous northeast-facing window walls yielding natural light and sweeping water views, and form spines to which five cross-corridors connect on each upper floor. The latter are glazed at each end, providing orientation cues as well as visual relief and a link to the outdoors.

Commentary

Relating the addition to the existing seven-story concrete monolithic hospital was a challenge, given its heavy expression and a volume four times as large as the new wing. The new quarterdeck provides a welcome light touch at the center of the complex, and buffers the clinic building from its bulky sibling. Its bright, airy main-circulation and waiting-room spine is a big improvement over the original building's darker internal corridors. NBBJ's expansion is humane and enlightened, bringing natural light and inspiring water views to everyone. ■



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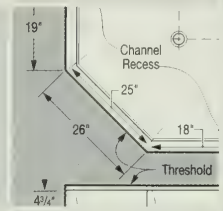
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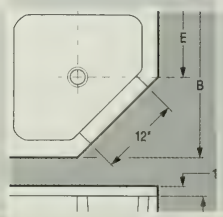
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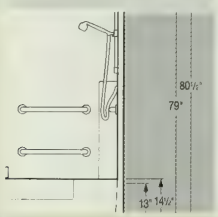
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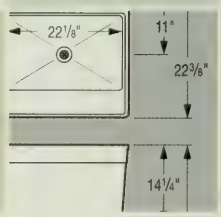
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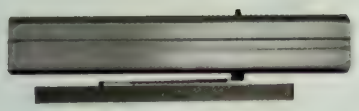




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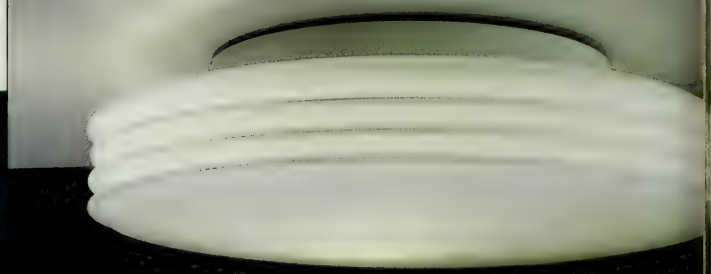


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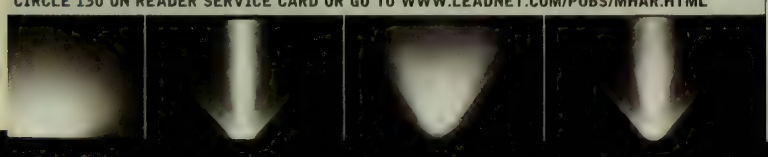
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REALITY **Structural steel is readily available**

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MYTH *Only steel prices have increased*

REALITY **Construction costs have increased for all materials**

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MYTH *Steel prices have increased by 40%*

REALITY **Material prices are up 40%, framing prices by 12%**

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Designing for Disassembly and Deconstruction

INNOVATION, FUELED BY ECONOMIC INCENTIVES AND SUSTAINABILITY GOALS, HAVE INSPIRED THE BUILDING INDUSTRY TO REDUCE CONSTRUCTION WASTE

By Barbara Knecht

It's the right thing to do. Recycle, reuse, reduce. Experts and advocates spout convincing statistics about how construction waste and demolition debris (C&D) chokes our landfills and harms the environment. In the U.S. and Western Europe, a half ton of construction waste and demolition debris is produced per capita annually. The fact that the U.S. demolition industry takes down 200,000 buildings every year explains why activities related to the built environment generate 30 to 40 percent of all waste.

Experts also say that instead of demolishing a building and dumping the remains in landfills, we should reuse and recycle old building materials. This practice has a long history. Roman and Greek columns and capitals showed up in buildings built by successors all over ancient Europe, North Africa, and the Middle East. Today, houses throughout the U.S. contain the recycled lumber of dismantled structures. It is only in the last half century that this country abandoned the art of recovery and reuse for the expediency, predictability, and standardization resulting from complete demolition and new construction.



At the Phoenix C&D Recycling Facility in Des Moines, demolition waste is loaded on the screening deck and conveyor. Sorters inspect their picks and drop them into nearby bins.

Does it make economic sense? There is a lot conspiring against it. Building components are difficult to separate without damaging them; salvaged materials have low value; buildings are rife with hazardous materials; and equipment, transportation, and disassembly time and labor are costly.

Bob Brickner, senior vice president at Gershman, Brickner & Bratton (GBB), a solid-waste management company in Fairfax, Virginia, dates the increased attention on C&D waste back about 15 years. His company wrote an Environmental Protection Agency (EPA)–funded manual on recycling and diversion of C&D waste in 1993 (www.swana.org).

Demolition contractors have always been salvagers to the degree that it does not interfere with clearing a site as fast as possible. Thus, they prioritize big, bulky, and valuable items, such as structural steel, followed by materials that are easily recovered, such as glass and concrete. Demolition contractors have knowledge of the market and the value of salvaged materials but have never been in the position to influence an energy-efficient demolition process. Their charge has been to get it off the site and out of sight.

In the last decade, however, new incentives have emerged to divert more types of materials from demolition into the reuse-and-recycling market. Existing landfills have reached capacity, and new ones are hard to locate and permit. Tipping fees have risen, especially for hazardous materials, and the LEED scoring system encourages waste diversion. "These factors have boosted the market for materials separation and, in turn, the growing market has brought the entrepreneurs and equipment engineers to increase receiving markets and develop better handling methods, both of which improve cost-effectiveness," says Brickner.

Barbara Knecht is an architect and journalist based in New York and Boston. She contributes regularly on technology issues.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 188 and follow the instructions. Other opportunities to receive Continuing Education credits in this issue include the following sponsored section: "First Impressions: Knowing Your Options Makes It Easy to Create Magnificent Openings," sponsored by JELD-WEN, page 192.

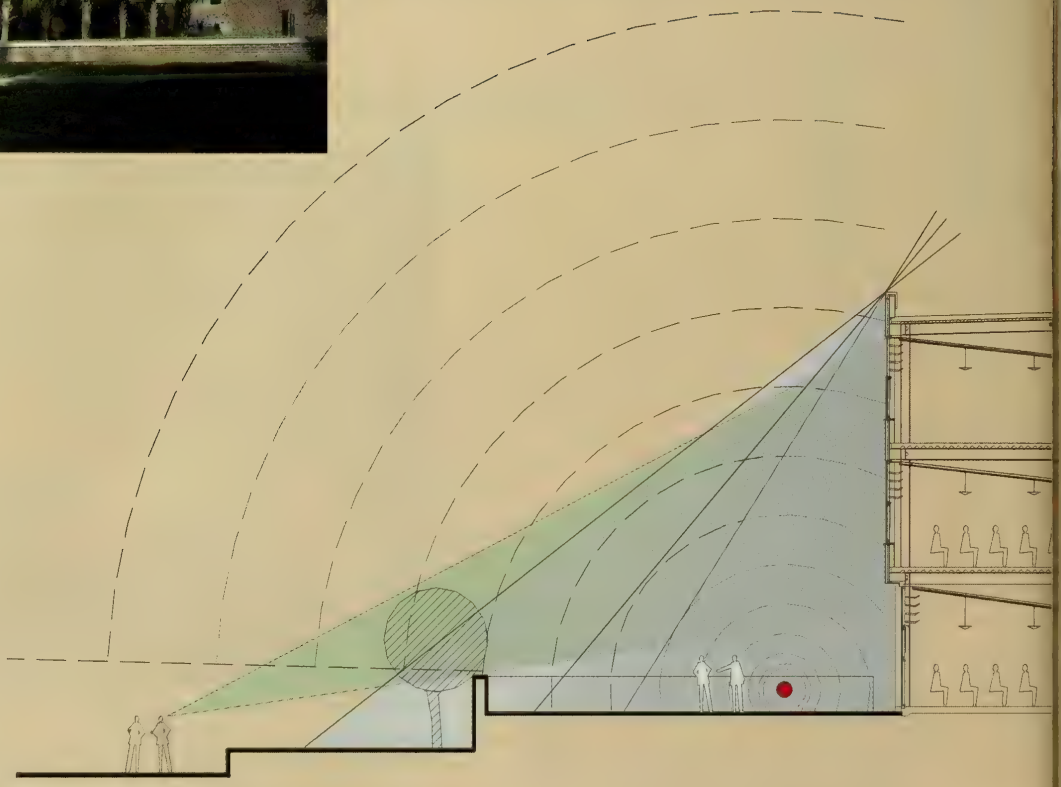
LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *List problems associated with disassembling buildings.*
2. *Discuss current and future incentives for reusing and recycling building materials.*
3. *Describe benefits of designing for disassembly and deconstruction.*

For this story and more continuing education, as well as links to sources, white papers, and products, go to **www.architecturalrecord.com**.





At Rinker Hall at the University of Florida (above), the Croxton Collaborative designed for disassembly by eliminating multiple layers of material and leaving structure exposed when possible (opposite two). The architects created an outdoor room (right) for construction-related activities that takes advantage of climate, building effect, topography, and organization.

Disassembly/Material Minimization
Construction Yard/Outdoor Room

Controlled demolition

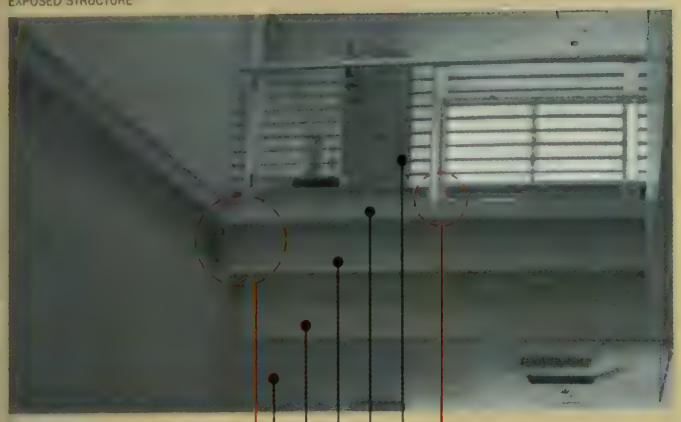
A dismantling and demolition project starts with an assessment of the construction methods and materials. Items of value, and those that are reusable and recyclable, are all identified. An analysis of hazardous material content will reveal limitations on materials reuse and disposal, and then a judgment is made on the extent of demolition. GBB recently completed a waste diversion and demolition at the Nashville, Tennessee, Thermal Waste-to-Energy Plant. Brickner describes the key elements of the Nashville process: "The first action was an auction of all the old equipment and spare parts. The auction raised $983,000, and purchasers were required to remove items at their cost. The primary construction materials on-site were concrete and steel, including the 200-foot-high smokestack that was taken down by controlled demolition. Overall, we charted a course for the demolition contractor that recycled 90 percent of the materials. We had the benefit of time to run the auction. Because of that, the demolition phase was considerably shorter than if the whole site had been crushed, and we added the benefit of generating nearly a million dollars for the owner."

GBB required the contractor to produce a weekly report of all the value and weights of materials that they pulled from the site, their destination, and their sales price. This data complements a directory that GBB compiled for the metropolitan Nashville government of construction materials, and the local and regional materials markets for reuse and recycling.

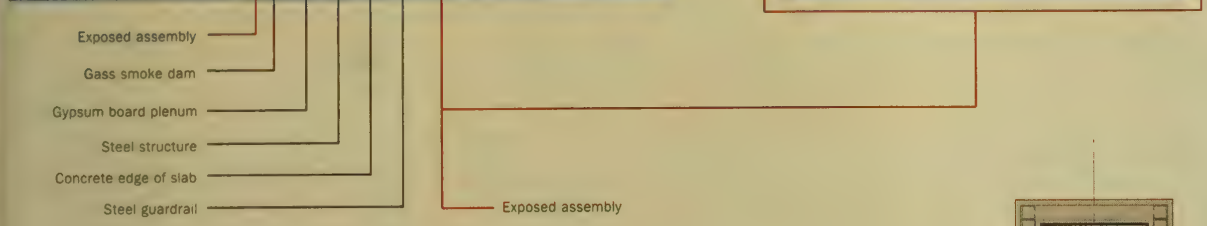
Cost-effective materials disposition depends on local and regional disposition of materials to ready markets. Contractor costs go up if materials need to be transported some distance to find their markets, or if they need to be stored for any length of time before reuse. The U.S. lags behind Europe and Canada, which have a much larger and more well-developed network of materials handlers and brokers. In Europe, forces encourage separation of materials and reuse. The land is scarcer, the value of materials higher, the availability of raw materials more restricted, and the regulations tighter. In the Netherlands, there is no such thing as demolition debris; it all has to be reused, and they have a robust "downcycling" market for materials to be reused in lower value applications. Brickner and GBB, in their training function, constantly promote the need for awareness of material markets and opportunities for reuse.

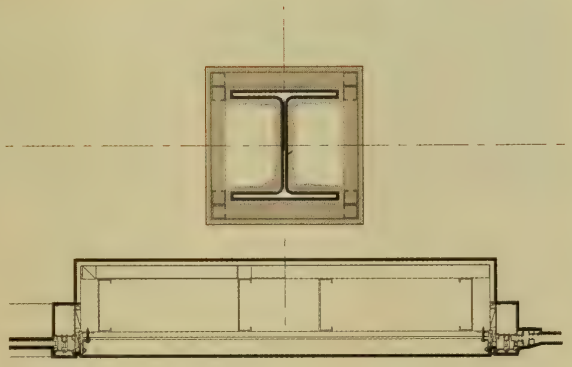
European environmental legislation also requires producer responsibility for collecting, sorting, and recycling of discarded products at the end of their service life. Manufacturers work with recycling companies and their own supply chains to manage the reuse and recycling of their products to control the life-cycle costs. While the U.S. operates far below this standard, American product companies increasingly see that it is sound business practice to take back and reprocess their own construction

DISASSEMBLY/MATERIAL MINIMIZATION
EXPOSED STRUCTURE









These details (right) show the traditional method of fireproofing (spray, steel studs, drywall, cornerbeads, spackle, paint), which inhibits disassembly. The architects substituted a sprinkler system in order to leave the materials exposed.

Disassembly/Material Minimization
Rinker Hall : Eliminated
"Layers"/Expose Structure

waste. Developing routine methods for reuse is part of developing a truly "closed-loop" environmental system—one where every material has an ongoing useful life, and waste is diverted from landfills.

Designing for deconstruction

According to Charles Kibert, founder and director of the Powell Center for Construction and the Environment at the University of Florida in Gainesville, "We are starting to do a good job of diverting construction waste, but we are not yet very good at preventing waste in the first place." Kibert points out that the LEED system, which has proved to be a huge catalyst for diversion of waste materials during construction, has been in place considerably less than a decade, but we have hardly begun to address the companion movement—Design for Deconstruction or Disassembly (used interchangeably)—that integrates waste prevention into the design process. Together they approach the problem from material and design decisions. First, individual building products should produce little waste in their use and installation and have high value for reuse and recycling; and second, the building itself should be designed with its disassembly or deconstruction in mind. As Kibert points out, we don't yet have an integrated system to deal with all aspects of construction waste prevention and recycling, but it isn't for lack of talent dedicated to providing solutions.

Kibert was the owner's representative, and the Croxton Collaborative/Gould Evans was the architect for Rinker Hall, home of the M.E. Rinker, Sr. School of Building Construction at the University of Florida. It was an opportunity for both Kibert and Croxton to explore Design for Deconstruction ideas. Randy Croxton, principal of the Croxton Collaborative, advocates an approach that he calls "materials minimization." In Croxton's words, "There are three aspects to our design philosophy. The first is that we look for ways not to build; that is, we explore solutions to programmatic requirements that don't create fully enclosed, energy-consuming space. The second is that we minimize in design and detail by avoiding glued and composite systems and by using assemblies of resources that can be retrieved and reused at the highest value. And finally, we facilitate disassembly by avoiding situations that require destructive demolition."

At Rinker Hall, the philosophy led to the selection of steel over concrete, while avoiding layers of fireproofing, Sheetrock, and other finishes. Floor slabs are concrete, but sealed and left exposed or covered only with resilient floor tiles rather than layers of carpets and pads. Partitions do not engage columns, anticipating and facilitating change and reuse. One of the hallmarks of Design for Deconstruction or Disassembly is a respect for change over the lifetime of a building.

Renovation and remodeling make up the lion's share of that



The 200-foot-tall smokestack at the Nashville Thermal Transfer Corporation facility was brought down using controlled demolition. Electrical equipment from other parts was auctioned off as part of the demolition and dismantling of the entire complex.

huge volume of C&D waste. According to some EPA statistics from 1996, demolition and renovation constitute 92 percent of construction waste. That is a tangible incentive to increase the life of the building and its materials by designing a building that can respond to changing programmatic needs. According to Croxton, "If a building doesn't support change and reuse, you have only an illusion of sustainability. You may have excellent building orientation and other energy-saving systems, but the building must also be able to be flexible to meet a change in curriculum." Indeed, building types that were once thought of as fixed, from research labs to university classrooms, have become examples of the imperative of flexible planning [see RECORD, August 2003, page 147].

Mechanical systems that typically run in false ceilings or are otherwise bound to the structure complicate disassembly and may necessitate destructive demolition for renovations. At Rinker, the Croxton Collaborative created a "highway" for the mechanical runs and placed them overhead, but they are masked from sight by manipulations of architectural elements such as the roof slope. Open and accessible to facilitate nondestructive changes, they are also generously sized to provide maneuvering room for unanticipated technologies. The resulting spaces are open and flexible to meet with a strong connection to the external environment and the changing patterns of light and shade through large windows and facade screens. Open, flexible spaces that are readily adaptable coincide with the goals of the internationally emerging Universal Design movement [discussed in RECORD, January 2004, page 145].

Planning ahead

Another university-practitioner partnership is creating a school designed for dyslexic children in California. Bradley Guy from the Penn State University Hamer Center for Community Design in Philadelphia and Scott Shell of EHDD Architecture in San Francisco are using a grant from the EPA to explore strategies and details for Design for Disassembly at the Chartwell School in Seaside (Monterey County), California. The exploration began with a matrix (see chart on page 188) of likely and typical construction materials and components, an analysis of their characteristics that rates ease of recovery and value after recovery. The chart of variables was a guide for material selection in the design of the building. Wood was selected for the structural framing. It is widely used in California and has a high economic value, but typical wood construction can be labor intensive to salvage and reuse. Design for Deconstruction suggests that connections should be simple, and fasteners should enable disassembly. One of the explorations at the Chartwell School that Shell and Guy have undertaken is how to keep to that principle and meet the requirements for building in earthquake zones.

Shell's earlier experience in school modernization sparked a particular interest in solving the problem of periodic window replacements. Typically, the cement plaster that encases the windows has to be destroyed, along with their weather tightness, to remove them. A simple window replacement for a large school would routinely grow into a major construction project that could not be completed during a summer break.



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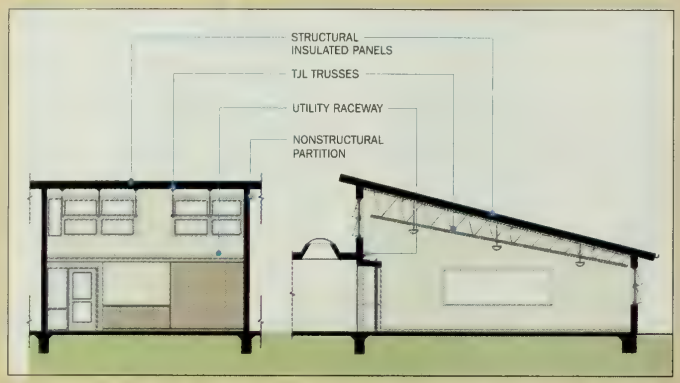
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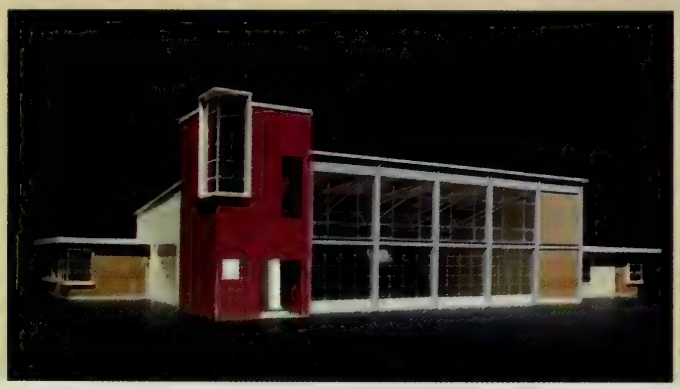
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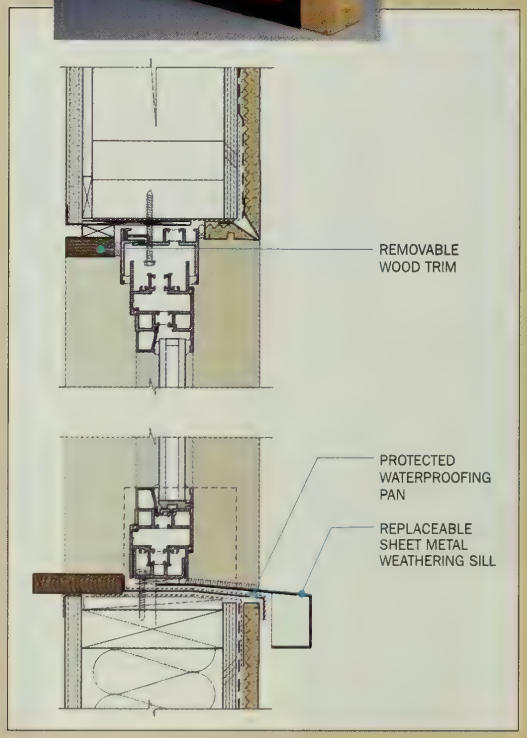
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The Chartwell School (bottom) received an EPA grant to research Design for Disassembly strategies. As shown in the section (below), utilities are segregated from wood framing to allow for easier disassembly and to reduce holes in the framing, thereby increasing future salvage value. The Design for Disassembly window detail (right and diagram, below right) allows the window to be replaced by simply removing the wood trim, and without disturbing the adjacent finishes.









Students would be moved to portable classrooms, and the whole process was a classic example of wasted materials, time, and money. To reduce time, the windows at Chartwell are detailed for disassembly with a minimum of waste. Similarly, the wood siding is fastened with clips that are screwed into the backing for ease of disassembly.

According to Guy, in separating systems and unlayering materials in a building, there are circumstances that require that either the design be rethought or a higher tolerance for deterioration be accepted. "If the building isn't caulked or painted at every conceivable place, for example, I might rethink how an area is protected by an overhang or some other building element. Or I may tolerate some wear or deterioration because I have created a system in which I can replace materials or components as needed without destroying the zone around it."

One area where there is no tolerance is worker safety. Dismantling buildings can be extremely hazardous, and it doesn't take much experience to understand that they are not designed to be taken apart. Besides toxic materials, assemblies give way suddenly, and infrastructure that is deeply integrated with structure is difficult to extract. When materials must be destroyed to be dismantled, workers are endangered by the released pollutants and dust. Dismantling roofs or other high building sections is much safer if they can be removed in large sections and brought down intact for disassembly.

Guy is researching generic methods and guidelines for disassembly. Separating infrastructure from large components and roofs is one goal. Wood-frame construction is typically riddled with holes drilled for utility lines, making disassembly painstaking handwork that would never permit a roof to be removed easily for dismantling. At Chartwell, as at Rinker, the structure and the systems are separated and exposed. Utility lines are run in a raceway located just inside the classrooms above the casework, where it is available but not generally visible. Buildings are an assemblage of systems that create an integrated whole, which will be more efficient if it is designed for a life cycle of construction, repair, maintenance, and adaptation of its components.

The difficulty of end-of-life disassembly of current buildings makes it obvious that better material choices need to be made in future buildings. Design for Disassembly experts add another voice to the growing chorus of architects who encourage the profession to take a leading role in determining the materials that will be used in buildings. Michael Stacey [see RECORD, July 2004, page 153], Croxton, or Shell might choose different materials, but they would all be likely to agree that the selection and employment of materials must be specific to programmatic and construction requirements and closely tied to manufacturing processes.



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DISASSEMBLY MATRIX FOR THE CHARTWELL SCHOOL

Spec section	Component	Expected life span in years	Ease of recovery as detailed*	Recovered for salvage orrecycling?	Value after recovery	Quantity of materials	Weight	Weight of materials	Embodied CO_2/Ton	Total Embodied CO_2	Salvaged materials available?
3300	Concrete	100	easy	recycling	low	536 cubic yards	2.025 tons/cu. yd.	1,085 tons	0.3/cu. yd.	160.8 tons	yes (aggregate and fly ash)
5100	Reinforcing steel	100	easy	recycling	medium	24,443 linear feet	.88 lbs/sq. ft. of concrete	9.5 tons	1.05/cu. yd.	10 tons	no
6120	Agriboard	100	easy	salvage	medium	16,372 square ft.	13 lbs/sq. ft. (8" panel)	106 tons	0 **	0	no
6170	Wood—wall studs	100	medium	salvage	medium	21,000 l. ft.	27 lbs/cu.ft.	23.6 tons	0	0	yes
6200	Wood—siding	50	easy	salvage	high	241.5 cu. ft.	26 lbs/cu.ft. (Fir)	3.14 tons	0	0	yes
7210	Batt insulation	50	medium	recycling	low	15,000 sq. ft. (wall) 4,500 sq. ft. (roof)	.28 lbs/cu.ft. (R-19)	3.1 tons	1.5/cu. yd.	18.9 tons	no
7412	Metal roofing	25	easy	recycling	medium	11660 sq. ft. 8745 l. ft.	2.2 lbs/l. ft.	9.6 tons	1.05/cu. yd.	10.1 tons	no
8212	Flush wood doors	50	easy	salvage	low	12 doors (3'x7') 252 sq. ft.	5.3 lbs/sq. ft.	.67 tons	0	0	yes
8520	Glass	50	medium	recycling	low	8,250 sq. ft.	3.28 lbs/sq. ft.	13.5 tons	1.3/cu. yd.	17.6 tons	no
9250	Gypsum board	50	medium	recycling	low	38,500 sq. ft.	2 lbs/sq. ft.	38.5 tons	0.2/cu. yd.	7.7 tons	no
9550	Bamboo flooring	50	medium	salvage	high	4,609 sq. ft.	2.04 lbs/sq. ft.	4.7 tons	0	0	no

* assuming adequate maintenance of weather envelope ** wood and other agricultural products sequester carbon

EHDD Architecture prepared this matrix as a means to analyze the value and recovery feasibility of materials and components prior to design.

Guy notes that we have had two significant and plaguing problems in 20th-century materials—asbestos and lead. Their toxicity has made building disassembly and materials reuse expensive, and sometimes impossible. Techniques for stripping lead paint from wood exist, but it can only be cost-effective if the wood has a high value architectural reuse: It is not cost-effective to strip wood for framing studs. Lack of standards for how to reuse some recovered materials is another barrier to achieving a closed-loop system. Wood grading and stamps have existed only since World War II, so structural integrity, moisture content, and species can only be surmised in materials pulled from older buildings.

Ultimately, it is what we build with now that will expedite future deconstruction. Some proponents would banish drywall, a composite of low-value materials that are completely destroyed in disassembly. Guy would argue that the closer a material is to its natural state, the higher its potential for reuse, and he advocates for simpler materials.

The entire industry will need to participate as we move toward zero-waste building construction. Perhaps in the future, architects will also produce deconstruction drawings and conduct deconstructability reviews. Materials will arrive at the site either ready to use, and therefore leaving either no waste or recyclable waste, or they will be packed in materials that can be returned to the product manufacturer for reuse or recycling. Building components will be labeled or bar-coded with disassembly instructions and constituent materials. Costs for demolition and deconstruction will plummet as waste disappears. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "Designing for Disassembly and Deconstruction" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 244).**
- **Fill out and submit the AIA/CES education reporting form (page 244) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. Why did the U.S. abandon the art of recovery and reuse?
- **a.** there were tax benefits for demolishing old structures
- **b.** it is less expensive to buy new materials
- **c.** to gain the predictability of new materials
- **d.** there was a shortage of available reusable materials

2. Construction activities generate what percentage of waste?
- **a.** 5–10 percent
- **b.** 10–20 percent
- **c.** 20–30 percent
- **d.** 30–40 percent

3. Which statement is true regarding the economic value of disassembly?
- **a.** building components are easy to separate
- **b.** buildings contain few hazardous materials
- **c.** salvaged materials have a high value
- **d.** disassembly time and labor are costly

4. Reasons to reuse or recycle demolition include all but which?
- **a.** landfills have reached capacity
- **b.** fees for disposing hazardous materials have risen
- **c.** the LEED system encourages new products
- **d.** it is hard to get a permit to create a new landfill

5. Which factor encourages more material reuse in Europe than the U.S.?
- **a.** the availability of raw materials is more restricted
- **b.** regulations are looser
- **c.** land is plentiful
- **d.** the value of reused materials is lower

6. Which is a description of a closed-loop environmental system?
- **a.** waste is diverted to landfills
- **b.** each material has a finite life
- **c.** a manufacturer reprocesses its own construction waste
- **d.** products are discarded at the end of their service life

7. Materials minimization advocates all except which?
- **a.** do not build fully enclosed spaces
- **b.** avoid assemblies that can be reused
- **c.** avoid situations that require destructive demolition
- **d.** avoid glued and composite systems

8. EPA statistics show that demolition constitutes which percentage of waste?
- **a.** 30 percent
- **b.** 50 percent
- **c.** 72 percent
- **d.** 92 percent

9. Design for Demolition suggests doing what to facilitate wood reuse?
- **a.** painting it
- **b.** using fasteners for connections
- **c.** not using wood
- **d.** caulking it at joints

10. What endangers workers during demolition?
- **a.** falling hammers
- **b.** pollutants and dust
- **c.** angry bats
- **d.** electrical malfunctions



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Tech Briefs

From balloon frame to CAD-tailored: Japanese precut framing technology comes to the U.S.

Advances in manufacturing technology are bringing mass customization closer to reality for home building. For a number years, building suppliers have manufactured made-to-order components with a high degree of automation. Now, a supplier called MF Technologies is using a CAD-driven system called MasterFit, developed in Japan, to churn out custom-cut, engineered wood frames for single- and multifamily houses.

The Minneapolis-based company opened its first fully automated U.S. plant in June 2004. Company officials tout the system's frugal use of materials, which makes for less factory waste, as well as its ability to produce tighter frames and shells, reduce production and assembly time, and simplify labor requirements.

The MasterFit system consists of a proprietary CAD tool (an AutoCAD add-on) to which data from standard CAD files, hard-copy drawings, or sketches are added. The tool then lays out the frame and cuts studs, joists, rafters, and trusses from engineered wood using a computer numeric control (CNC) system. Frame components are labeled and shipped to building sites as a kit of parts. Because they are assembled with interlocking metal pegs and plates, the frames can be erected by construction teams with minimal training, rather than skilled laborers. (Prefabricated building panels used with the frames must be attached with nails or screws, however.)

The Albert Lea, Minnesota, factory can turn around an order in about two weeks. Once components are on-site, the shell of a 1,500-square-foot house can be erected and enclosed within three days, according to MF Technologies president Santos Martin.





MasterFit Frames (right) are shipped to a site and assembled with joinery included in the kit. The house above was built by seven women enrolled in a carpentry-training program in Duluth, Minnesota, who had only one week of experience.

Selling points, future efforts

The company emphasizes engineered lumber's sustainability and strength. "When I saw MasterFit's system in Japan, I was struck by its structural efficiency," said James Brew, an architect with LHB in Minneapolis and a consultant to MF Technologies. "A four-by-eight beam can span twice the distance and carry up to twice the load of conventional lumber." Despite these advantages, the growth of this market has been slow. While the number of engineered wood plants in the U.S. has about doubled since 1989, engineered wood still represents only 5 to 6 percent of the North American structural framing material market, according to the Engineered Wood Association.

Sustainability may end up being the system's strongest selling point. "We're using about 2 to 5 percent less lumber than typical stick-frame houses, and making the frames from trees that grow back quickly," says Martin. "And you can get a better R-value with the same insulation," he added, because the frames are tighter than stick frames. Houses built with the system also lend themselves more easily to deconstruction and disassembly for reuse, according to LHB's Brew.

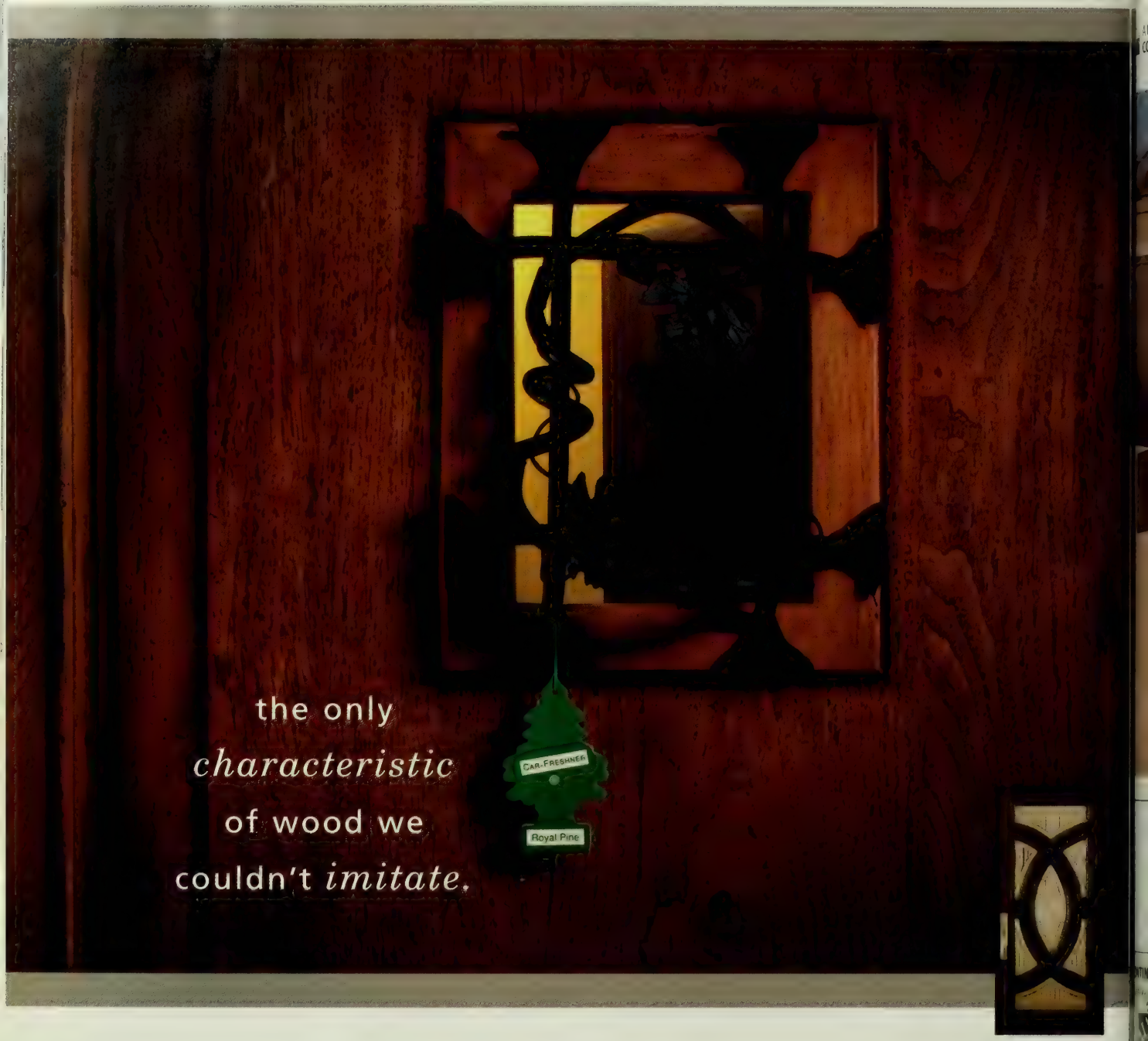
Although the process has been used mostly for single-family homes and multifamily town houses, Martin is thinking of going after the light commercial building market. "Because it's an engineered product, we can eliminate on-site errors and speed enclosure," he said.

Kicking the tires

Some who have studied mass customization point out limitations of the MasterFit system. Kent Larson, professor of architecture at MIT and director of its research program House_n, says that it lacks well-conceived pathways for utilities such as pipes and wires and doesn't address the integration of structure with interior, non-load-bearing infill partitions and cabinetry. "A process for making high-quality, mass-customized homes requires considering the whole system, from flashing to how air moves indoors." Daniel Schodek, a professor of architecture at Harvard's GSD, says, "It's a highly developed approach, but likely unadaptable to late changes that invariably occur during custom building." (LHB's Brew disputes this, saying the kits can be field-modified by the same techniques used for stick-frame construction.)

Mass production and customization for homes has long been a source of study and interest within the architectural community. Current efforts include MIT's Open Source Building Alliance, which is carrying out a research initiative into standardized, component-based designs for homes that calls for matching automated design tools with efficient fabrication, delivery, and installation methods using nonproprietary digital systems. "That is the only way we will get the economies of scale and competition necessary to change a dysfunctional industry," says MIT's Larson.

Judging from previous standards-development efforts in the computer and building industries, progress is likely to be slow and uneven. In the meantime, a system like MasterFit offers a measure of mass customization for willing designers. *Ted Smalley Bowen*



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JELD-WEN PRESENTS

First impressions:

Knowing your options makes it easy to create magnificent openings

Every designer wants to make a statement, whether the project is a $200,000 tract home or $13 million custom home. Now, you can do that, regardless of the price range of your project.

This continuing education unit is an A-to-Z guide to the options available to architects in selecting appealing, trouble-free doors. It will discuss not only door design but also materials, appropriate environment, hardware, glass and caming options, finishing and customization of both exterior and interior doors. The discussion will include garage doors, which are now becoming a design consideration for many architects and homeowners.

Any discussion must begin with the materials and their distinctive characteristics. Exterior door materials require careful analysis. Today, there are a great number of alternative door types available, and each must be considered within the context of the environment in which they will be installed.

Wood is the traditional choice. Wood is beloved for its character, warmth and style. A variety of quality hardwoods are available to suit varying architecture and styles.

Architecturally significant entry systems have historically begun with components of one of the following hardwoods:

Alder is a versatile wood that accepts stain very well and, thus, has a greater color range than many other species. Stain colors used on alder can range from a light blonde to deeply colored merlot or gunstock with varying degrees of red in the center of the range.

Alder features a fairly straight grain with areas of burl clusters and a few small knots, which add character and will show some darker textures and shades when finished. Alder is the lightest and least

NTINUING EDUCATION

Use the learning objectives below to focus your study as you read **First impressions: Knowing your options makes it easy create magnificent openings.** To earn one AIA/CES arning Unit, including one hour of health safety welfare edit, answer the questions on page 197, then follow the porting instructions on page 246 or go to the Continu- g Education section on *archrecord.construction.com* and low the reporting instructions.

ARNING OBJECTIVES

ter reading this article, you should be able to:

- *Explain the available options for exterior and interior doors*
- *Select the proper exterior door for any exposure*
- *Understand new technologies in door manufacturing*

dense of the hardwoods generally used by manufacturers but may be stained to look like its more expensive hardwood cousins, including cherry.

Historically viewed as an overabundant weed tree, Western red alder now sustains a major hardwood industry, centered on the Northern Pacific Coast. Red alder has become the most abundant broadleaf tree in the Pacific Northwest. It now accounts for seven percent of the total timber inventory and 61 percent of the hardwood inventory in western Oregon, Washington and British Columbia.

American Black Cherry, from forests in the Northern United States, varies in coloration from rich red to reddish brown in color. It is occasionally found with thin gum pockets and small clusters of pin knots and random streaks of blonde-colored sap wood, which give this hardwood a distinctive appearance. Cherry is a strong, stiff wood with a fine, straight, close grain and smooth texture. It stains easily and smoothly.

Northern Red Oak, from U.S. sources, is a high grade and exhibits consistent color and grain patterns. It is a widely utilized and immediately recognizable hardwood. Northern Red Oak is known for its dramatically pronounced grain pattern and offers a wide color range, making it similar to alder in its versatility. The species ranges in color from light straw to honey with a light pink tint, and it accepts stain very well.

Honduras Mahogany, now generally imported from Central and South America, is the most stable of the hardwoods, with less expansion, contraction and moisture absorption than any other species. Mahogany varies in color from several shades of reddish brown, to deep, rich red. It stains well for an excellent finish. The grain can vary, ranging from straight to interlocked, and it shows a prominent growth ring figure.

For years, mahogany has been the number one cabinet wood of the western world due to its stability and appearance. This reddish heartwood deepens with age to rich reddish-brown. It is often fine-textured although somewhat variable, and it often has ribbon striping that is sometimes curly or wavy. It is excellent for lumber and veneers. Mahogany finishes very well and is moderately resistant to termites.

Walnut is a durable wood harvested from the Eastern United States. It is traditionally used for fine furniture, gunstocks, musical instruments and boatbuilding and is becoming popular for doors. It features a color range from rich dark brown to purplish black with highly attractive blonde streaks of sapwood within the darker tones. This wood normally has a straight grain, and occasional waves or curls are sometimes present. Knotty walnut is also available with its distinctive features.



Hard Maple is often the choice to lighten a room. It has a predominantly creamy white color, a fine grain texture and is hard enough to resist abrasions and wear.

Few woods have the distinct character of maple. It is bold, handsome, unique and is marked by dramatic variations in grain pattern and wood color, often within an individual door, drawer front or frame component. Maple is increasing in popularity for home interiors.

Hickory is a strong and varied-grain wood. In a natural or light finish, its color can change wildly, from white to dark, even chocolate brown. Random knots, worm holes and mineral streaks add even more character and boldness to hickory's natural beauty.

The sapwood of hickory is white, tinged with brown, while the heartwood is pale to reddish brown. The wood is known for its strength and shock resistance.

Appropriate exposure: A critical consideration

A critical consideration in choosing an appropriate entry door or "entry system," a package that includes a transom and sidelights, must be the exposure of the entryway to the elements.

Despite the architectural appeal of hardwood entry systems, there are situations where exposure is too extreme for hardwood. For those situations, there are a number of alternatives. "Composite," fiberglass or steel doors are specifically designed to withstand even the harshest of elements in the most extreme conditions.

It is prudent to ask the following questions to determine whether you have special performance needs:

- *Are you designing for a climate with extreme temperatures?*
- *Are there seasonal high winds or hurricanes?*
- *Are exposures northern, southern, eastern or western?*
- *Is controlling noise levels outside the home an issue?*
- *Does the front entrance have an overhang?*
- *Have you thought about fire ratings?*
- *Is energy efficiency a priority?*

Technically advanced, low-maintenance exterior doors in fiberglass, steel and composite are also engineered and constructed to resist buckling, chalking and peeling, all common problems historically with steel and fiberglass doors.

Fiberglass, steel and composite doors may begin with a polystyrene core (an alternative to polyethylene, which was found to lose its thermal resistance over time). Polystyrene core doors are ENERGY-STAR-rated and may prove as much as 40 percent more efficient than other door types in resisting thermal conduction.

As is the case with hardwood doors, steel, fiberglass and composite doors may be enhanced with either transoms or sidelights to create entries that have the same dramatic effect as hardwood entryways.

Fiberglass exterior doors are more weather resistant than hardwood doors, and are less expensive. Because of their popularity, they are being manufactured in a growing number of designs that conform to a range of architectural styles.

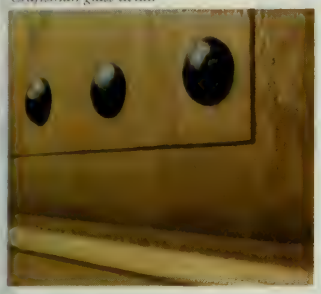
The degree of absorption of ultraviolet rays is a factor to consider in selecting engineered entry systems. Because the degree of absorption varies according to color, it is critical that designers know that painted steel doors can be affected by heat. In 110-degree ambient heat, the temperature of a white steel door rises 10 to 15 degrees; a dark green door of the same material will experience a temperature rise of roughly 70 degrees.

A combination of storm doors and exterior doors will work fine in winter, but heat build-up between the doors in summer can cause distortion of the steel surfaces. The steel may expand with heat, and oil-canning or warping may occur.

Steel-edged doors offer increased safety and security by adding strength and a fire rating factor (for true protection, these doors must be used in combination with certified frames and hardware). Polystyrene-core steel edge doors are also hurricane-rated, assuming they accompany the other elements of a door system which includes (besides door slab) frame, hardware and other elements which meet the specific building code requirements for the county. Hurricane rating assures the doors will not be blown out of casings or allow an unreasonable amount of water to infiltrate.



Craftsman glass detail



Round clavos



Corner strap



Rustic grille

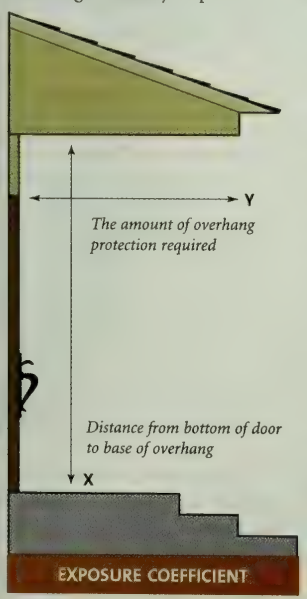


Entry system with sidelights and transom

Wood composite doors offer the beauty of wood but are a low-maintenance alternative that performs well in varying climates. The wood-like surface is made to resist dents and along with advanced lumber stiles and composite rails will not rot. They are designed to perform well under pressure, some meeting the strict building codes of Dade County, Florida (see door system components above). They come in a variety of panel profiles and textures, and may include glass inserts and heights up to 8'0."

Custom composite doors move wood-alternative options into the area of high-end elegance and extreme durability. These doors, while emulating the rich appealing look and feel of solid wood doors, are engineered to withstand the rigors of nearly any environment. Also now available in French doors, this technology allows for a door nearly indistinguishable from real wood, yet equally at home in the desert or in the midst of constant coastal extremes.

If your choice is hardwood, the placement of the door will be a major factor in its maintenance and longevity. To adequately protect a hardwood door and extend its life, the designer of the entry system must do some factoring. The architect must first factor climate, then the compass direction the door will face. These will determine, for the most part, the amount of overhang necessary to protect the door from weather.



To calculate a correct overhang for moderate climatic conditions, a simple formula is "$Y=\frac{1}{2}X$," in which "Y" is the length of the overhang and "X" is the height from the base of the door to the bottom of the overhang (*see chart at left*).

Where decay or termites are of concern, another option to consider are "treated" products, manufactured through trademarked processes that insure 100 percent penetration of cut-stock to create worry-free, reliable wood doors that are protected from decay, termites and water damage.

In a newly patented treatment process, water has replaced petroleum-based solvents as the carrier for the active ingredients—tebuconazale as the fungicide, imidicloprid as the insecticide—reducing environmentally damaging VOCs (volatile organic compounds) by up to 97 percent.

Interior doors for every practical consideration

Interior doors may be made of hardwood, veneered plywood with pre-finished hardwood appearances, molded wood fiber or medium density fiberboard (MDF), which offers the polished appearance of natural wood.

Other interior options include mirrored doors that reflect natural light throughout the room and French doors.

Veneered plywood and molded wood fiber doors are available with solid cores for areas of the house where you need to deaden sound. Solid-core interior doors reduce sound transmission by as much as 50 percent.

In the manufacture of molded wood fiber doors, sawmill waste is reduced to woodchips, screened for size uniformity, softened by steam in what is called a "digester," and further reduced to fibers. After these fibers are dried, they are mixed with resin and wax and formed into sheets. Sheets are molded into designs by compressing the sheets at high temperature and trimmed to size.

Router-carved MDF doors, until recently, were available in a limited number of styles. They are now available in more than 70 standard designs. As an alternative option, designers may create their own custom MDF doors.

"Any design you can imagine, we can now create," says Chris King, product manager for a West Coast manufacturer. "The design can literally be drawn on a cocktail napkin, brought into the dealer, designed and then created. We can now provide options to fit any decor."

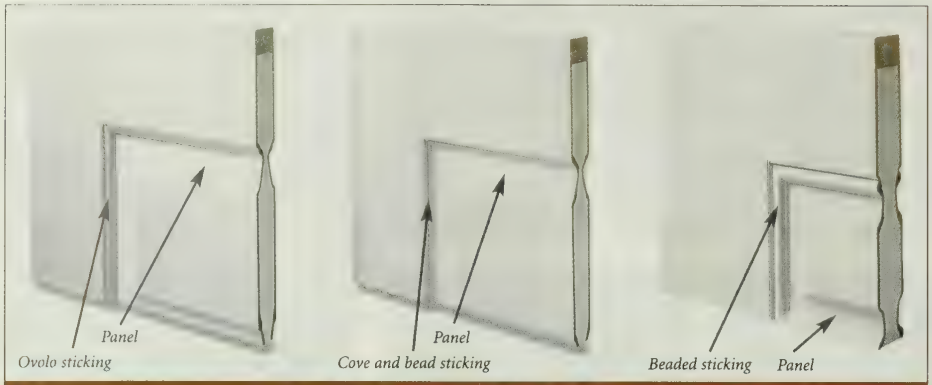
Router-carved interior doors can be designed to carry an architectural theme throughout the home, or to make a specific room stand out from the rest. The skin of interior router-carved doors are created from a single sheet of MDF. MDF doors have a detailed and polished appearance very similar to that of genuine wood.

The core is polystyrene, making the router-carved products one-third lighter than other MDF doors and increasing the STC (sound) rating of the door to 31, giving them the highest sound resistance of any residential door on the market.

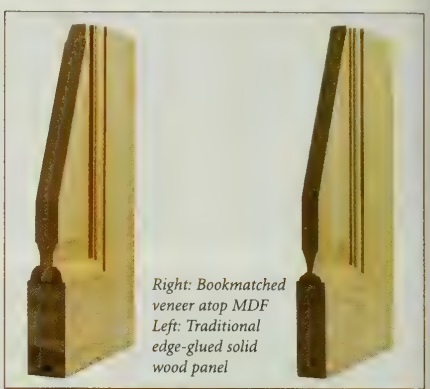
"With computerized router technology, we make door customization easy," says King, "And we do it without the cost and long lead-times of traditional custom door manufacturing."

Enhancing the wood look, custom MDF doors are available with options like sticking profiles and raised moulding, for a classic wood door look unlike anything else on the market.

All-wood edges provide superior screw holding, and the polystyrene core makes new MDF products up to 50 percent quieter than standard hollow-core doors.



STICKING AND PANEL PROFILES



PANEL CONSTRUCTION



DECORATIVE GLASS

Eye-catching glass accents add a sophisticated touch to both exterior and interior doors

In addition to a broad range of stained glass options, including multiple glazing for protection and energy efficiency, manufacturers now offer a variety of decorative glass textures, patterns and colors.

Among the options:

- ***Waterglass:*** *A fairly obscure glass, with a texture resembling subtle waves.*
- ***Baroque:*** *A unique, slightly distorting glass in a number of colors, including gray.*
- ***Clear Seedy:*** *An obscure glass in which tiny bubbles create a lively texture and natural sparkle.*
- ***Granite:*** *An obscuring glass with a surface resembling a fine rock-like surface.*
- ***Sahara:*** *A very obscure glass with the rippled texture of desert sand.*
- ***Glue Chip:*** *Another very obscure glass with a feathery, frost-like texture.*
- ***Reeded:*** *English glass roll-formed into a strong linear pattern.*
- ***Cotswald:*** *An obscure glass with a vertical pattern resembling running water.*
- ***Ripple:*** *Obscure, with a surface like wind-blown water.*

Any of the stylized glasses may be installed to fill an entire lite or may be incorporated in a variety of intricate glass designs for either exterior or interior use. They are available with brass, polished zinc, satin nickel or patina (black) caming.

Panel options and sticking patterns multiply design possibilities

Every door design is defined by its panel configuration and sticking profiles along with material. Panel options and sticking profiles determine whether the door will read as traditional or contemporary, Craftsman or Mission, elegant or old-world.

Exterior panel construction options include traditional edge-glued solid wood panels, with precise detail and deep shadow lines; or bookmatched veneer placed atop medium density fiberboard (MDF), which offers enhanced strength and stability.

Panel profiles may be hip-raised or double-hip raised, flat or scooped, depending upon the degree of relief desired. The "double-hip" reveals two beveled edges for a visual alternative.

Sticking profiles, at the edges that join the panel to stiles and rails, allow for a wide variety of design options. Beaded sticking adds a strong three-dimensional look to traditional panel design. Ovolo sticking offers a classic rounded design, and modified cove and bead sticking is a detailed relief. For a Craftsman or contemporary look, non-profiled or square sticking with flat panels gives a clean look. The door can be further enhanced by the addition of a shelf to complete the Craftsman look.

Panels can include hand-carving for a strong statement of elegance; they can also include glass insets from a large variety of decorative glass options. Traditional Craftsman-style glass includes geometrically-patterned designs in earth tones such as green, blue, gold and rust. Customization of stained glass also includes choice of caming in patina, brass and satin-nickel for a touch of architectural elegance. Beveled, grooved and sculpted glass panel options are a popular choice for almost any style of home or application within the home, such as French doors.

Panel options can also include louvered panels on either the top or bottom or both panels. These are used for laundry rooms and closets for air circulation. Staved panels allow for a planked look in the door. These can either be actual planks formed to make the panel or a planked look using grooves into a door surface. Both provide for a more informal look, and if painted are used in many cottage, Cape Cod or beach-front style homes.

Sidelights and transoms that either match or complement the door may be configured with all the same options to enhance architectural style.

Architectural hardware adds drama with rustic charm

Entry locksets along with a wide variety of metal accents now strengthen the architectural statement of old-world styled doors with their rustic, hand-forged charm. Offered in a wide variety of styles, speakeasy grilles, clavos, straps and door knockers add a distinct element of drama to wood or custom composite entryways. Hardware is available for both door and sidelights.

"No-dent" composite garage doors match any architecture

Wood composite garage doors, in a surprising range of architectural styles, provide an answer for the residential architect looking for the elegance of wood—without the maintenance; the strength of steel—without the potential for denting or rusting; and the durability of fiberglass—without the cost.

Deep relief panels, clavos or a variety of decorative hardware are now standard items in some product lines. The new door lines can turn architectural eyesores into handsome architectural statements.

High-technology garage doors begin, as do many of the new engineered exterior and interior doors, with a CFC-free, polystyrene core for heightened R-values and stability over the life of the door.

Thermal-set melamine resins are combined with refined cellulose fibers to create an exterior door skin that is resistant to moisture, cracking, rotting, sub-zero freezing, desert heat and the damaging effect of the sun's ultraviolet rays.

Advanced polymer skin and trim boards won't crack, separate, rust or dent. Also, wood-grain composite exterior skins are indistinguishable in appearance from wood.

Layered LVL (laminated veneer lumber) support rails make engineered garage doors structurally advanced, compared to even the best-made traditional wood doors. ■

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at: archrecord.construction.com/resources/conteduc/archives/0410jeldwen-1.asp

To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, contact Mary Anderson at JELD-WEN, (541) 850-2606 or email MaryAn@jeld-wen.com. The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Explain the available options for exterior and interior doors*
- *Select the proper exterior door for any exposure*
- *Understand new technologies in door manufacturing*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 246. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

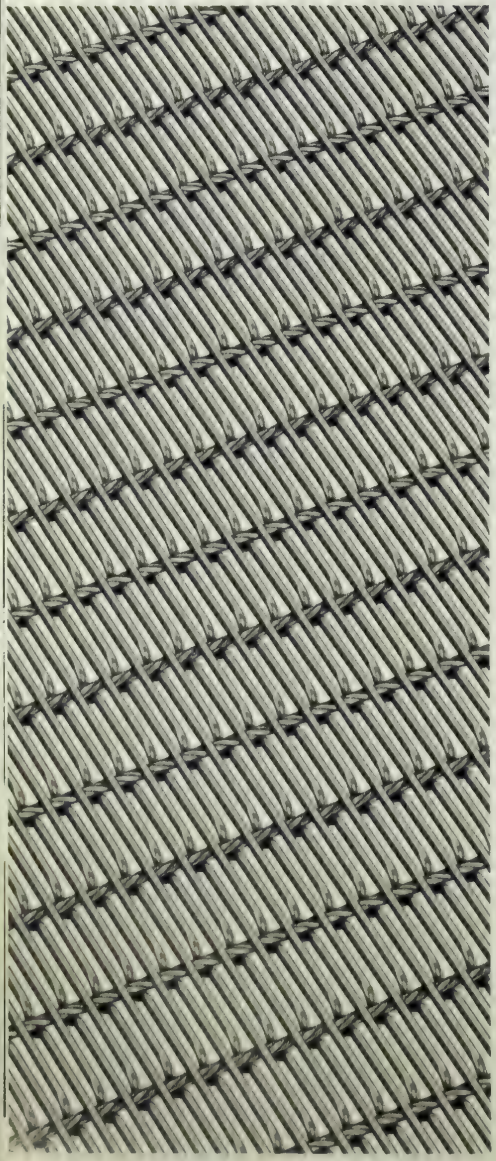
1. A main consideration in choosing an appropriate entry door is the exposure.
 - **a.** true
 - **b.** false
2. Which of the following is not a characteristic of polystyrene cores? They are:
 - **a.** highly insulative
 - **b.** sound resistant
 - **c.** lightweight
 - **d.** fire resistant
3. Glass panel options include:
 - **a.** beveled
 - **b.** grooved
 - **c.** sculpted
 - **d.** all of the above
4. Router-carved interior doors are made of:
 - **a.** MDF
 - **b.** IWP
 - **c.** LVL
 - **d.** melamine
5. In 110-degree ambient heat, the temperature of a white door will gain 10 to 15 degrees; a dark green door of the same material __ degrees.
 - **a.** 30
 - **b.** 40
 - **c.** 50
 - **d.** 70
6. Which of the following is not a performance consideration in choosing a door:
 - **a.** Are you designing for a climate with extreme temperatures?
 - **b.** Are exposures northern, southern, eastern or western?
 - **c.** Does the front entrance have an overhang?
 - **d.** Is the architectural style traditional, contemporary or old world?
7. The benefits of wood composites are:
 - **a.** wood-like appearance
 - **b.** strength
 - **c.** durability
 - **d.** all of the above
8. _____ doors are hurricane-rated.
 - **a.** polystyrene-core steel doors
 - **b.** wood composite doors
 - **c.** a and b
 - **d.** none of the above
9. Melmac is the trade name for what component of UV and moisture-resistant garage doors?
 - **a.** polystyrene
 - **b.** melamine
 - **c.** urethane
 - **d.** none of the above
10. New treated wood products offer decay, termite and water-damage protection at what penetration of cutstock?
 - **a.** 50 percent
 - **b.** 70 percent
 - **c.** 97 percent
 - **d.** 100 percent

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BRIEFS

A Constructive Madness For more than a decade, Frank Gehry worked on the design of the Lewis House, whose bold forms and materiality rival the signature houses of Frank Lloyd Wright and Ludwig Mies van der Rohe. When the estimated cost of the house hit $82 million, however, owner and long-time Gehry supporter, Peter B. Lewis, pulled the plug. The design process is documented in *A Constructive Madness*, a film written by Jeffrey Kipnis, curator of architecture and design at the Wexner Center in Ohio. Information at www.aconstructivemadness.com.

New zero-energy houses fight pollution The Department of Energy seeks to help solve pollution problems with houses that have zero electricity requirements. Last month, it partnered with Habitat for Humanity to build a fourth near-zero-energy house for less than $100,000. The average daily energy consumption cost is 82 cents, as opposed to the typical $4 to $5. More information can be found at www.energy.gov.

Design-build in Kansas City Modular House One in Kansas City is the latest project of Dan Rockhill, a professor and practicing architect, and Studio 804. The design-build program at the University of Kansas, founded by Rockhill in 1995, allows students to apply classroom learning to real life. The studio focuses on innovative, affordable housing. Twenty students constructed Modular House One in 18 weeks for roughly $130,000. The prefabricated house is finished in a deep Brazilian redwood. To learn more, go to www.studio804.com.

Residential architects join together Noting that most Americans live in poorly designed and constructed homes, many of which are hazardous to health, this summer the Congress of Residential Architects convened to provide a forum to enhance residential architecture in the U.S. by sharing knowledge among constituents, increasing awareness of good residential design, and providing advocacy to designers. The group will host a discussion entitled "The State of Residential Architecture" in L.A. this December. Visit www.reinvention2004.com for more information.

Utopian living flourishes in Moscow Erick van Egeraat and Zaha Hadid plan residential complexes in Moscow in the coming years. Egeraat's design includes five apartment towers, each inspired by the work of an avant-garde Russian artist. Hadid's project will sit on an embankment and is slated to cost $180 million. The Capital Group of Russia sponsors both projects. For further information, visit www.capitalgroup.ru/eng. *Audrey Beaton*

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Houses sited off the beaten track share an obligation to provide a setting conducive to serenity and solitude. Leaving civilization behind involves a gradual shedding of pavement, signage, telephone poles, and crowds. Along with these signs of modernity, speed and strife dissolve in nature's timeless, quiet rhythms. The architectural strategies used to successfully mingle design with nature vary, but the houses discussed here have common threads. Framed and extended views of the outdoors bring the pleasures of life outside deep within. Employing indigenous natural materials and existing landscape and topography in the design, either symbolically or literally, is another way these projects incorporate nature. Whether located in the desert highlands of Texas, on a remote island off Finland's southern coast, at Wisconsin's northernmost tip, or on a rugged beach in the southeast of England—each of these houses displays a vernacular architecture that profoundly connects with its surroundings. *Jane F. Kolleeny*



Sited in a pine and birch forest, the house has framed views extending out through the tree trunks, across the broad expanse of Siikanjärvi to a narrow sound and beyond. Pallasmaa likens the pine-boarded building, with its long, curved shape, to a boat, providing protection from the elements and navigating the rise and fall of the rough terrain.





The angled roofline of Juhani Pallasmaa Architects' **House of Silence** smiles as sublimely as a cheshire cat





By Peter MacKeith

We make our houses in our own image," Finnish architect Juhani Pallasmaa is fond of saying. This quiet ambition echoes admirably throughout the design of the House of Silence. The house embodies the shared values of the architect and client—restraint of expression, integrity, and an appreciation of the natural world. In addition, the interplay of landscape and architecture aims at a still and contemplative state of being for its occupants.

To sit and slowly breathe inside the house's moist, warm, smoke-scented sauna—feet propped up on a rail of aspen, gaze directed to the south through a horizontal slot window—makes palpable the intended stillness of the design. Overlooking the pine-and-birch-forested landscape along southeastern Finland's Siikanjärvi (Whitefish Lake), the framed view extends out through the tree trunks, across the lake's surface, and through a narrow sound to a larger lake. The resulting expansiveness of the view collapses foreground, middle ground, and distant horizon into a focus on the infinite sky.

The 2,000-square-foot, orange-stained wooden villa is combined with a modest-size, tar-blackened sauna building and several even smaller outbuildings. This grouping constitutes the House of Silence and is, in fact, the result of Pallasmaa's lifetime of research into intimate scales of design, even as he oversees construction of his master plan for the largest urban design project in Helsinki's history, a centrally located residential, commercial, and market-square district, rising above the capital's former long-distance-bus plazas. Pallasmaa's more recent house designs, including this one, have all addressed the conditions of terrain and orientation through pronounced arced forms: sliced segments of a circular geometry in plan, two levels under a mono-pitched roof in section.

The topography of the site slopes gradually southwest to the lakeshore, interrupted by immense granite boulders within the forest, still lying now as they were when strewn by the retreat of the glacier 10,000 years ago. Traversing this slope, the arcing double-height southern wall of the villa sweeps toward the lake in order to follow the daily course of the sun, while closer to the lakeshore, a counter move of the curved concrete wall of the sauna structure cuts into the granite bedrock, providing protection and privacy to those within. Pallasmaa likens the long, curved, pine-boarded shapes of the house and sauna to boats, as if the structures provide not only protection from the elements, but perhaps more important, navigate the rise and fall of the rough, granite terrain through form, materiality, and orientation.

Conceived of as both a retreat (for its owner) and a guesthouse (available for rental by the traveler), the buildings possess a desired informality in their siting and in the openness of the public spaces. Counterbalancing that quality are more formal tactics: the strong geometry of the plan, the elevational compositions of the front and back, and the spatial hierarchies of public and private activity areas. The tapered hull-like shape of the house, supported by steel columns within overall

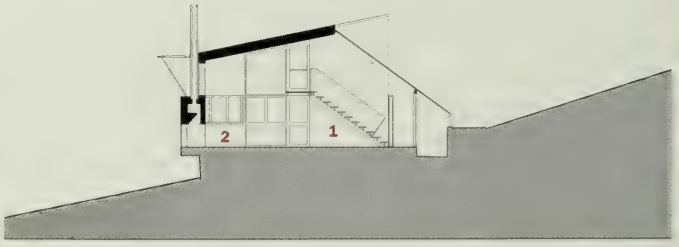
Peter MacKeith, a permanent resident of Finland, is associate dean of the School of Architecture and associate director of the Sam Fox Arts Center, Washington University in St. Louis.

Project: *House of Silence, Siikanjärvi (Whitefish Lake), Finland*
Architect: *Juhani Pallasmaa Architects—Juhani Pallasmaa, Hon. FAIA; Jukka Liikanen (design assistant)*
Consultants: *Pauli Wetterstrand (structural); Jukka Sainio (mechanical); Pasi Hakala-Rahko (electrical)*



The main level of the house contains an ample living room centered around a fireplace and hearth, with a horizontal expanse of windows facing south (left). A kitchen/dining area sits under a suspended mezzanine overlooking the living room (below).

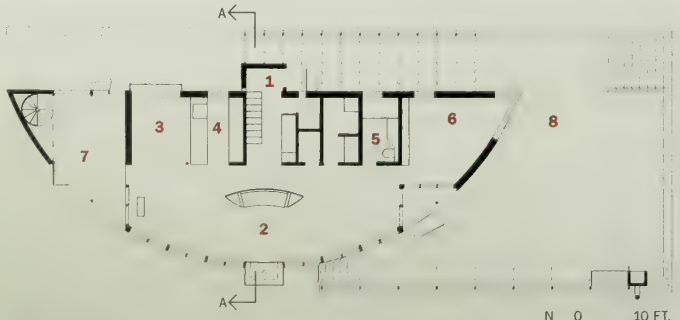
1. *Entrance*
2. *Living*
3. *Dining*
4. *Kitchen*
5. *Bathroom*
6. *Library*
7. *Terrace*
8. *Courtyard*



SECTION A-A

0 10 FT.
3 M.





MAIN FLOOR

N 0 10 FT.
3 M.

wood framing, creates a luxurious length along the long axis—emphasizing movement and expanse—and a feeling of intimacy and immediacy by virtue of the short cross axis. On its main level, the house contains an amply sized living room, centered around an iconic fireplace and hearth; a double-height library; a kitchen/dining area; and a full bathroom. Three bedrooms upstairs align along a suspended mezzanine overlooking the living area. The mezzanine terminates in a screened and skylit porch above the main level's enclosed terrace.

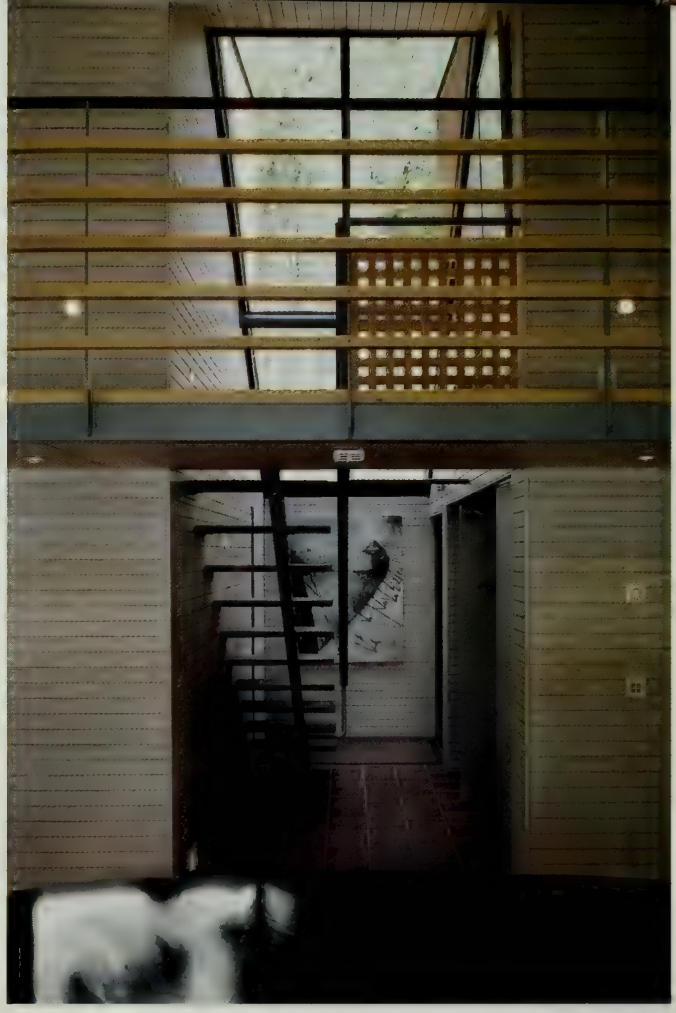
The interiors are modest in their specific furnishings but refined in their finishes and details: stained pine boarding inside and out, ceramic tiling for the main level's floor, mahogany throughout the bathroom, and alderwood for the sauna's interior. The house condenses and displays Pallasmaa's interpretation of building elements and details—what he often refers to as the existential, even sensuous, "encounters" of architectural experience. These include such activities as

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Apertures abound throughout the house, "orchestrating views and light in the manner of a cinematic montage," says Pallasmaa (top two). Along with several smaller outbuildings, an alderwood sauna features a horizontal slot window where views to the south make palpable the intended stillness of the design (below).



ascent and descent (the stair); warmth and illumination (the fireplace and hearth); dining and familial life (the table); water, bathing, and hygiene (the bath); entrance, reception, view, and illumination (the door and the window).

Apertures abound throughout the house and are used to accentuate both specific places and particular activities. "The openings are conceived to orchestrate views and light in the manner of a cinematic montage," says Pallasmaa, who has written extensively on architecture and film, "sometimes with surprising cuts." Whether reclining on the curved settee in front of the hearth, contemplating the flames in the glass-backed fireplace, or gazing at the play of water and light beyond the horizontal expanse of windows girding the southern facade, the visitor reaches a place both protected and receptive. Drowsing while immersed in the Japanese soaking bath, eyes focused on the lake's distant horizon, or falling asleep upstairs behind a sliding door and under a sliding roof-window—as the late summer breezes sway the treetops, the visitor finds harmony and quietude. ■

Sources

Wood finishes: *Siekkelin Puutyö*
Glazing: *Valkealan Lasi*
Kitchen equipment: *Miele*
Sauna roofing: *Pintakate*
Japanese bath: *Messurakenne (mahogany); Suomen Metallisilta (stainless steel)*
Heat pumps: *Carrier*
Light controls: *Lexel*
Art: *Art Center Salmela*

For more information on this project, go to Projects at **www.architecturalrecord.com.**

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Perched in a meadow like small islands are two low, black rectangular structures whose horizontality mimics that of the lake they overlook. Separating them is a patio aligned with a channel in the distance (top spread and bottom).





Salmela Architects' **Two Black Sheds** scrap log cabin nostalgia for a commonsense Modernist approach

By Camille LeFevre

Off Wisconsin's northernmost tip in the chilly clear waters of Lake Superior lie the rugged, forested Apostle Islands. Of the 22-island archipelago, only Madeline Island was substantially settled, first by the Native American Ojibwa, then French fur traders, followed by missionaries who used it as an outpost. Today the island boasts an eclectic mix of 200 year-round residents and a summer population of about 2,000. Most of the year, ferries run between its only town, La Pointe, and Bayfield, Wisconsin, allowing residents and tourists to come and go, bringing in a steady stream of visitors from the mainland. Enjoyed by yuppies and hippies alike, the island's amenities range from pricey shoreline restaurants to Tom's Burned Down Café, from quaint bed-and-breakfasts to scenic campgrounds. For Bruce Golob, a retired schoolteacher, and his wife, Jean Freeman, a marketing consultant, who have a town house in Minneapolis, Madeline Island was the place for their primary home because "once you step off the ferry," Golob says, "the world just sort of stops." Similarly, a new visitor can't help but suddenly stop, with a sense of stunned appreciation, at the first glimpse of the couple's "cabin," Two Black Sheds.

Camille LeFevre writes about architecture and the performing arts for a variety of national publications.

Perched in a meadow like small islands are two low, black rectangular structures whose horizontality mimics that of the lake they overlook. Separating the structures, like a caesura, is a patio aligned with a channel between two nearby islands visible in the distance; the patio is vertically punctuated by an open, white-brick chimney, which stands tall and etched with black smoke in imitation of the surrounding birch trees. On the chimney's plinth sits a Philippe Starck–designed plastic couch, in the lime green of newly unfurled spring leaves—the finishing touch to this incongruously delightful outdoor room.

Dramatic but not ostentatious, unconventional and yet unpretentious, Two Black Sheds takes "a very commonsense, Modern approach to present-day problems," says David Salmela, FAIA. It is "just what we needed and nothing more," Golob says. The couple also wanted to feel outside when they were inside; and they wanted accommodations for guests







1. *Mechanical room*
2. *Bathroom*
3. *Bedroom/office*
4. *Entry*
5. *Kitchen*
6. *Living*
7. *Dining*
8. *Screen porch*
9. *Master bedroom*
10. *The "unchimney"*

The ceiling in the main building is mustard yellow, the casework Parma violet, and the concrete floor a deep earthy red that recalls the red rock cliffs found along the island's shoreline.

and a structure that was economical to build and easy to maintain. The materials needed to be readily accessible and transportable on the ferries.

Salmela says the dramatic elements of site, lake, and his now-signature "unchimney," as he calls it, implied that "the buildings should be abstractly simple." Their high side walls hide a wide gabled roof, angled to disperse snow and rain while creating "an appealing flat-roof element." Conversely, the screen porch features an inverted-gable roof, also to spill off the elements. Painting the sheds black (the ends are Parma violet) was an intuitive choice that turns upside down the usual expectations about Modernist buildings being white, Salmela adds.

Clad in one-by-four cedar lap siding, the 900-square-foot main building comprises a kitchen/dining/living area separated from the bathroom and bedroom by privacy walls topped with glass "to give the perception of one room, while ensuring light and privacy," Salmela says. The 360-square-foot guest cottage has a bedroom, bathroom, and storage area, and offers guests both privacy and access to the main building. While the interior walls of both buildings are one-by-six flush-tongue-and-groove pine painted white, the main building's open ceiling is a mustard yellow, the casework Parma violet, and the concrete floor an earthy red copied from Freeman's purse that also recalls the red rock cliffs along the island's shoreline.

Light is balanced throughout the 18-foot-wide main cabin via skylights and large windows to the southeast and the lakeside northwest. Because of such openness, Golob says, "when we're inside, our access to the outside is immediate and constant." And while there is a wood stove within the house, having the hearth outdoors reiterates the blending of inside and out.

A stair at one end of the 4.5-acre site leads down to Lake Superior, where the couple keeps a dock and kayaks. On the way back up, for a moment only the unchimney is in view, an arresting image suggesting the remains of a burned-down house. Next in view is the outdoor couch, which refers to a northwoods custom of retrieving discarded sofas from ditches and using them for outdoor seating, Salmela says, which "goes to show you that Modernism has a sense of humor."

As do the islanders. "On the island, anything goes. It would be inappropriate to be too predictable or conservative," says Salmela of Two Black Sheds. Adds Golob, "As David said, and we agree, the island can handle it because it's such a weird place anyway." ■

Project: *Two Black Sheds, La Pointe, Madeline Island, Lake Superior, Wis.*
Architect: *Salmela Architects—David Salmela, FAIA; Souliyahn Keobounpheng; Tia Salmela Keobounpheng*
Consultants: *Bruno Franck (structural); Coen + Partners (landscape)*
General contractors: *Northwood Construction*

Sources
Windows and doors: *Loewen*
Glazing: *Velux Skylights*
Paint: *Benjamin Moore*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



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The house is low and massive in front, with concrete piers that rise up to support a floating wood and metal roof.

The **Trahan Residence** conceived by Tighe Architecture perches with dignity in the Texas Hill Country

By David Dillon

Wimberley is all about views—of low rolling hills and rocky outcroppings, of creeks, orchards, fields of buffalo grass, and clumps of live oak trees. It sits in the heart of LBJ country, a gentler and more intimate landscape than most of Texas, yet still sufficiently grand to bring out the worst in many architects. Ten-thousand-square-foot limestone houses with gratuitous forms and self-propagating roofs abound, as though the prevailing typology were the country club. Sometimes it takes an outsider to see what really matters.

Patrick Tighe grew up in Massachusetts, and after seven years with Morphosis opened his own office in Santa Monica, California. A mutual friend introduced him to John Trahan, a bachelor banker from Houston, and before long he was designing a comparatively modest (3,200 square feet) house for him in Wimberley, on the fringe of Austin. His approach to the local vernacular was appropriately skeptical and cautious.

"I loved all the stone and the standing-seam metal roofs," he recalls, "but I also felt they were so overused that they had become ordinary rather than special. So I tried to underplay those elements and introduce other materials that could be used anywhere."

The result is a spare and abstracted Hill Country house that uses local limestone, but only in the fireplace, and that features a standing-seam metal roof, but with only one plane. Elsewhere, steel, glass, stucco, and wood transform the house into something light and contemporary.

The design is as much about siting and views as form. The architect tucked the house into the side of a hill instead of plopping it on top like a hood ornament. It reads immediately as part of the landscape, with a curving anticipatory approach that implies more than it reveals. Tighe describes the result as "a series of contradictions," but "counterpoints" is more like it. Heavy plays against light, open against closed, solid against transparent, past against present. From the front, it is low and massive, with rugged concrete piers rising from the earth to support a

Contributing editor David Dillon is the architecture critic for The Dallas Morning News.

Project: *Trahan Residence, Wimberley, Tex.*
Architect: *Tighe Architecture—Patrick J. Tighe, AIA, principal; Jason Yeager, Mike Yee, Jeff Buck, Rene Tribble, Joe Dangaran, team; Joel Miller, interior design*
Consultants: *Joseph Perazzelli, (structural); Sia Garestani, Massoud Narimir (m/e/p)*
General contractor: *Dunn & Burnette*





1. *Bedroom*
2. *Bathroom*
3. *Library*
4. *Office*
5. *Living*
6. *Dining*
7. *Entrance*
8. *Kitchen*
9. *Laundry*
10. *Gallery*
11. *Garden*
12. *Covered walkway*
13. *Workshop*
14. *Garage*



floating wood and metal roof. It seems grounded, archaeological almost, with only a narrow clerestory to hint at something different beyond.

The interior, on the other hand, is as open and fluid as the exterior is dense and rooted—a 260-degree sweep of glass overlooking 14 acres of buffalo grass and live oak trees, with a small creek at the bottom. Here is the prototypical Hill Country landscape edited for maximum visual impact.

A spacious living and dining area occupies the center of the house, separated from the master suite by a monumental stone fireplace. The kitchen and guest wing veer off in the opposite direction, framing a small outdoor garden. The kitchen is intentionally small—"a one-butt space," says the owner—and the master bath won't float a Pontiac. "This house was

THE MASTER BATH WON'T FLOAT A PONTIAC. "THIS HOUSE WAS DESIGNED FOR ME AND MY LIFESTYLE," SAYS THE OWNER.

designed for me and my lifestyle, not for the resale market," he says. "I assume I'll be able to find someone like myself if I ever decide to move."

Glass was the biggest item in the construction budget, huge expanses of it framing the living spaces and wrapping the master bedroom, a pristine glass cube that creates the feeling of sleeping outdoors without the heat and the bugs—a Texas sleeping porch as Mies might have designed it. These spaces all face due west, generally an economically reckless move in Texas, but one that in this case seems to work because of a deep 20-foot protective overhang. The roof is supported by splayed pipe columns that provide a balletic counterpart to the concrete piers on the opposite side of the house.

The domestic centerpiece is a massive fireplace of Wrightian grav-



Steel, glass, stucco, and wood transform the house into something light and contemporary (opposite). A spacious living and dining area occupies the center of the house (this page), separated from the master suite by a monumental stone fireplace.



The master bedroom is a Miesian glass cube that creates the feeling of sleeping outdoors (above). The kitchen (right) is intentionally small—sufficient for the needs of the owner.



ity made of limestone collected on-site and meticulously chipped and set by local craftsmen. The owner insisted on using his own stone, his father having been a master mason, and the architect eagerly complied. As both artifact and metaphor, it works beautifully.

Not everything rises to this level. The forest of steel columns on the west seems somewhat busy and distracting, especially when viewed from below. And the guest wing, foursquare and finished in tan stucco, looks a bit bland and awkward. While the desire for a simpler and less acrobatic complement to the main house makes sense, the execution is ordinary at best.

What works consistently is the way the house connects to its surroundings and combines traditional materials and building styles with contemporary ones to acknowledge vernacular precedents without lapsing into mindless mimicry. Historic Hill Country buildings, the ones that O'Neil Ford and others rediscovered and celebrated, were clean, solid, straight to the point, and strikingly modern. The Trahan House is light, open and expansive, of its place, and very much of its time. ■

Sources

Window system: *Binswanger Glass*
Roofing: *Desotex*
Bath tiles: *Ann Sacks*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

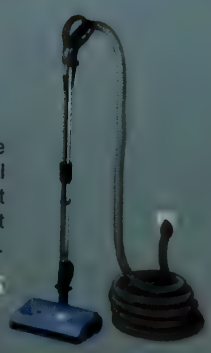


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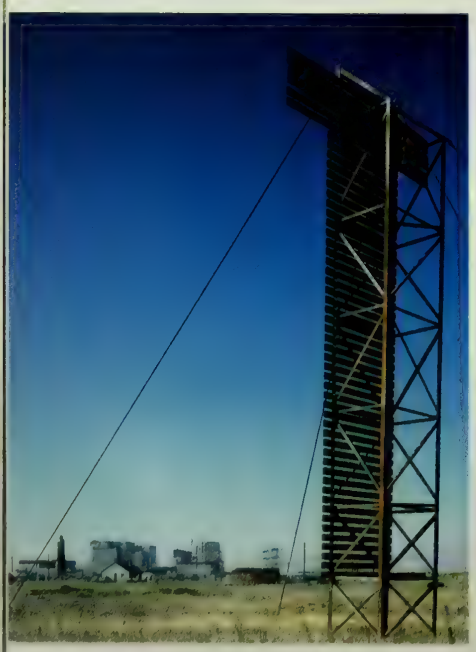
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Sliding glass doors unite the interior with an outdoor sun deck along the sea-facing length of the house (top and bottom right). A view from the deck reveals the rugged desolation of the surroundings (opposite). A nearby antenna inspired the architect's design (bottom left).







Simon Condor Associates sculpted **Vista House** as a direct response to its rugged, windswept surroundings

By Lucy Bullivant

A committed community of fishermen and families live in a variety of cottage types (some made from old railway carriages) in Dungeness Beach, a locale with a raw climate and constant wind on the southernmost point of Kent in southeast England. Here, a masterful conversion of a fisherman's hut called Vista demonstrates how the careful choice of materials combined with the innovative use of new products can create domestic architecture of high quality at low cost (in this case, approximately $210,000). London-based architect Simon Condor designed the house with materials available from the local "DIY" (do it yourself) store in the manner of other nearby homeowners. The result fuses the language of neo-vernacular with a modestly Modernist bent.

Condor, whose practice has never exceeded four people, has designed some exceptional residences and workplaces in England, the U.S., Germany, and Japan. In his reinterpretations of Modernist traditions, he is deeply influenced by the simplicity of local traditional architecture. The rationale behind Vista echoes the pragmatism of his other low-cost rural buildings. This includes the headquarters of the textile designer Georgina von Etzdorf in Wiltshire, an industrial shed clad in steel with an internal plywood structure; and the steel-framed, farmlike units of the Suffolk workshops in Stradbroke, East Anglia. Both Vista and these projects feature shedlike structures relating comfortably to the landscape.

When the clients bought the house two years ago—a basic bungalow sitting on a wide pebble beach—it had no windows on the east side to permit views of the beach and sea. The project began as a renovation, but by the time it was finished, 75 percent of the building was replaced with new timber, due to the fragility of the original structure. While its footprint remained intact, all other aspects of the house changed. Internally, priority was given to maximizing the public areas, which are clad in a modestly priced Finnish spruce plywood that is knottier than birch but that Condor made sure was fitted to the highest standards. Its consistent use throughout the house provides a sense of warmth and comfort, along with the impression of spaciousness in the living areas.

Constructed from the original shed, a new entryway retains the slight odor of old tar-slicked timber. It leads through to a glazed hallway and the first of two living rooms (called the "snug"), made cozy with a wood-burning stove. A new bathroom resides to the right, in keeping with Condor's adherence to a relative absence of windows except on the





1. *Deck*
2. *Dining/kitchen*
3. *Living*
4. *Snug*
5. *Storage*
6. *Bedroom*
7. *Bathroom*
8. *Shed/entry*
9. *Airstream caravan*

Lucy Bullivant is an architectural critic, author, and curator. She is the editor of the forthcoming book 4dspace: Interactive Architecture *(January 2005).*

Project: *Vista House, Dungeness, Kent, England*
Architect: *Simon Condor Associates—Simon Condor, Chris Neve*
Consultants: *KLC Consulting Engineers (structural)*
General contractor: *Charlier Construction; AAC Waterproofing and M R Anderson Roofing (subcontractor)*





The silver aluminum shell of the adjacent 1954 Airstream (above) makes a striking contrast to the black house. Constructed from the original shed, an entryway retains the odor of old tar-slicked timber (right).

oceanside. Inside, he has fitted the tub itself into a box cantilevered out over the pebble beach so bathers can be at one with the surroundings.

Leading off the "snug" are the bathroom, dining room/kitchen, and a living room with sliding glazed doors uniting the indoors with an outdoor sun deck running the sea-facing length of the house. A striking soot-black Vulcanite rubber usually employed to waterproof roofs is used here unconventionally to cover two walls and the roof. Although local cottages are frequently covered in roofing felt with a coat of tar, Condor's more sophisticated contemporary use expands this idea. Here, the plywood elevations are covered in rubber with sheets that are cut to size and glued to fit each facade. The sheets were prepared in a factory in Belgium, with cutouts made for doors and windows, and delivered to the site "a bit like a child's building set," he explains. The roofing subcontractor then glued them to the plywood walls with contact adhesive. "I believe it's the first time the rubber was used to clad an entire building in this way," Condor continues. Known as EDPM (for ethylene propylene diene monomer), the material has the advantage of being fireproof, water-resistant, vapor permeable, resistant to ozone and UV, and nondegradable over time. It is considered a "green" material, as is the spruce cladding on both the interior and the exterior timber frame, chosen specifically because it came from managed forests in Finland.

If it were located in a strictly urban context, Vista would be an eye-catching scheme that achieves an innovative solution at low cost.



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Public areas are clad in a modestly priced Finnish spruce plywood (this page). Its consistent use throughout the house provides warmth and snugness while conveying the impression of spaciousness in the living areas.



Because the design was developed in this unique, desolate environment, it has even greater singularity. Condor feels strongly that "the context is part of the story." A beach with no boundary lines is a classic "no-plan" environment where house construction is typically improvised or "bodged" (made or repaired clumsily). One reason Vista fits in and works so beautifully here is that it balances the contrasting qualities of domestic intimacy with the openness of the house to its environment in a coherent manner.

No wholly new building was allowed on the beach, so to extend their living spaces, the owners, inspired by an Airstream caravan situated in an equally barren environment near architect Josh Schweitzer's house at Joshua Tree in California, put guests up in their own 1954 Airstream. The silver of its aluminum shell makes a striking visual contrast to the tactile black-rubber-clad house. The Vista House is ideally integrated into this special context, since it so effortlessly makes a virtue out of the unconventional. ■

Sources

Exterior and interior wood: *UPM-Kymmene Wood*

EPDM black rubber membrane: *AAC Waterproofing*

Timber windows and sliding doors: *Scandinavian Window Systems*

Lighting: *SKK and Louis Poulsen*

Faucets: *Die-Pat Divisions*

Steel bath and show tray: *Kaldewei*

Wood-burning stove: *Rais*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



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Residential Products



▲ Authentic brick

Castaic Brick's Landscaper's Select collection includes Rustic Cobbled Brick (above)—tumbled, random-size bricks for interior and exterior walls, surrounds, and walkways; Brickbits—crushed brick chips for ground cover and paths; and Quick Brick—thin brick veneer that is easy to install on walls, fireplaces, BBQ surrounds, and walkways. Castaic Brick, Castaic, Calif. www.castaicbrick.com **CIRCLE 200**

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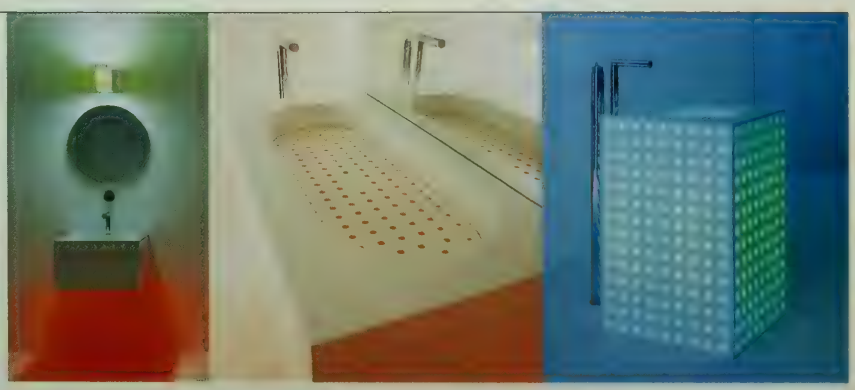
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► Corian bathroom collection

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CIRCLE 205



Residential Products

▼ Crafty cabinet

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► Hand-forged faucets



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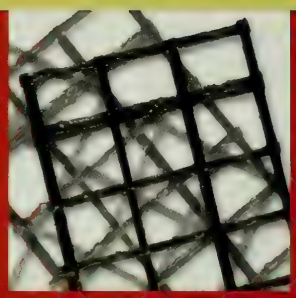
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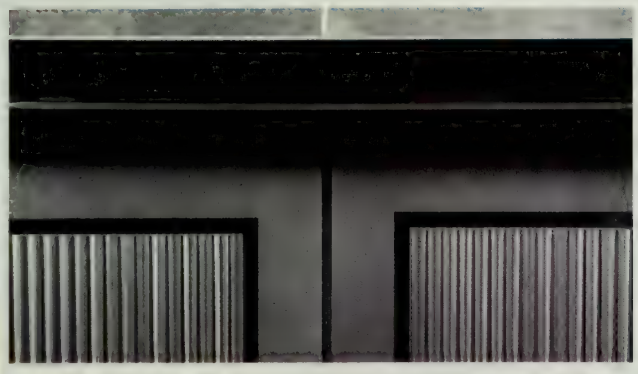
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Products

Metal Cladding & Treatments

The following **metal-clad products** include elevator doors, roofs, column covers, and wall panels realized in bronze, stainless steel, copper, aluminum, and zinc. Also featured are **special treatments**, including coatings that enhance color retention and durability or even create an antique look. *Rita F. Catinella*





Feathers pattern shown in six separate panels (above). Engine Stripe pattern (right).

Predecorated/preformed stainless-steel elevator doors available in six patterns

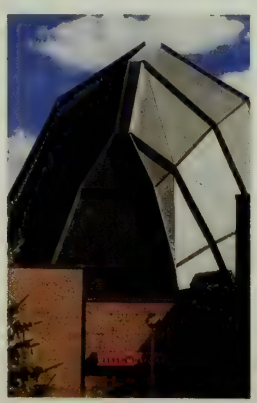
Eco-Nor, a product from Northern Engraving Corporation, offers six distinctive, predecorated and preformed elevator-door facings in 18-gauge stainless steel. The competitively priced doors are ideal for remodeling or budget-sensitive projects. The finishes of all designs complement existing or new #4 stainless-steel frames. A standard size for 42" x 84" clear center openings is available, and the facings are preformed with L or J breaks on request. No prior specification is necessary for prompt lead times, according to the manufacturer.

To order, specifiers need to choose a model number, quantity, and edge configuration. The six Eco-Nor patterns include EC 001, a Feathers pattern in a ½" #4 satin full frame with nondirectional borders; EC 002, an Engine Stripe pattern in a ½" satin full frame with nondirectional borders; EC 003, a combination ½" and 2" Engine Stripe with nondirectional vertical borders; EC 005, an alternating ⅛" #4 satin and nondirectional stripes with nondirectional vertical borders; and EC 006, a Feathers pattern in three separate panels with ½" #4 satin frames and nondirectional borders. Eco-Nor, Sparta, Wis. www.eco-nor.com **CIRCLE 212**

An unusual roof of Italian copper-clad tiles

Tegola Canadese copper-clad tiles from Treviso, Italy, distributed in the U.S. by Petersen Aluminum, are part of an unusual roof for the University of Minnesota Weber Music Hall in Duluth, Minnesota. The 22,000-square-foot facility accommodates an audience of 350 plus a 70-member orchestra and 75-member chorus.

Designed by Cesar Pelli & Associates of New Haven, the focal point of the facility is an angular dome covered with 12,000 square feet of the copper-clad tiles. According to Pelli's design team, the acoustical requirements of the orchestra dictated the architectural shaping. Although the angular dome has a large number of facets with coping assemblies forming complex triangular sections, the tiles can be installed quickly and easily using traditional roofing tools.



The Weber Music Hall's roof.

The Tegola Canadese tiles feature a 99.7 percent pure copper foil coating and are constructed of eight layers of different materials, including impregnated fiberglass and natural bitumen. Over time, they will develop a protective green patina. Petersen Aluminum, Elk Grove Village, Ill. www.pac-clad.com **CIRCLE 213**



Metal wall panel profiles offer more design choice

Until recently, preformed metal wall panels offered designers a choice of only corrugated or ribbed profiles. The Concept Series is a new collection of concealed-fastener exterior metal wall panel profiles from Centria that gives specifiers more design flexibility. The panels feature a complementary asymmetrical geometry and identical side joinery permitting integration of multiple profiles within a single elevation for horizontal and vertical application. Available in 12" and 16" widths, the panels come in G-90 galvanized steel, aluminum, stainless steel, and Centria's Durallure finish system. Profile options consist of narrow ribs, medium-width ribs, and wide flat surfaces that can be used to create a single repetitive appearance or to generate a pattern or feature on a wall elevation.

Concept Series panels can be installed as part of a field-assembled wall system with liner panels or as the exterior component of an insulated wall design with a vapor-permeable air and water backup system. Centria, Moon Township, Pa. www.centria.com **CIRCLE 214**

▼ They've got aluminum surfaces covered

Gooding Aluminum offers an extensive range of aluminum materials, surface finishes, and products—including balustrade panels, ceilings, canopies, flooring, wall paneling, door cladding, and lighting—for interior spaces. Gooding Aluminum's extensive range of cladding panels were specified to create a dramatic effect at the ME2 nightclub in Omagh, Northern Ireland (below). The manufacturer's Impressional and Perforated decorative cladding panels were used on bars, columns, and the DJ podium within the space. Gooding Aluminum, London. www.goodingalum.com **CIRCLE 215**





▲ Improving upon the original

Historic terne metal, used extensively throughout colonial America, inspired a Leesburg, Virginia, homeowner to design a classic colonial farmhouse with an "old tin roof" using Follansbee's Terne II. Terne II is coated with Follansbee's patented zinc/tin alloy, which acts as a barrier and helps to reduce oxidation of the surface before painting. Follansbee's Rapidri acrylic paint offers enhanced durability and color retention. Follansbee Steel, Follansbee, W.V. www.follansbeeroofing.com **CIRCLE 216**

► Protecting a landmark



New York City's landmark George Fuller Building features Art Deco metal figures and decorative features in bronze and cast iron designed by Walker and Gillette in 1929. Building Conservation Associates (BCA) was hired to clean and repaint the figures. BCA specified Series 90-97 Tneme-Zinc urethane primer, Series 73 Endura-Shield aliphatic acrylic polyurethane for the intermediate coat, Series 1078 Fluoronar Metallic for the metallic gold coat, and Series 1076 Fluoronar Clear topcoat for color retention. Tnemec Company, Kansas City, Mo. www.tnemec.com **CIRCLE 217**

► Antiquing concentrate



Birchwood Casey's M25 Antique Black antiquing concentrate can blacken and brown metals such as copper, brass, and bronze alloys, as well as zinc die castings and zinc-plated surfaces. The concentrate works on both solid and electroplated surfaces, including door and window components. The concentrate is mixed with water at 10–20 percent for blackening or browning copper and brass alloys, and at 5–10 percent for blackening zinc. Birchwood Casey, Eden Prairie, Minn. www.birchwoodcasey.com **CIRCLE 218**



◄ Aluminum composite

Moseley Architects of Richmond were commissioned to design Deep Run High School in Glen Allen, Virginia, in the style of a nearby office park. The firm was also required to incorporate sloped metal roofs on the gables of the building. The team paired brick with Reynobond aluminum composite material (ACM) installed above the windows on the second floor. Over 48,000 square feet of ACM were used as fascia/soffit and column covers and over 49,000 square feet for vertical wall panels. Alcoa Architectural Products, Pittsburgh. www.alcoa.com **CIRCLE 219**



▲ High-tech cladding

Approximately 30,000 square feet of Alucobond aluminum-composite material was chosen to reflect a high-tech image for the 12-story Acxiom River Market Tower in Little Rock. Alucobond is made of two sheets of .02" aluminum bonded to a lightweight, thermoplastic core.

Paired with precast concrete, the Alucobond material was used as part of a glass curtain-wall system, with the exterior including spandrels of various sizes. Interior applications include column covers and a balcony wrap in the lobby areas. Alcan Composites USA, Benton, Kentucky. www.alucobond.com **CIRCLE 220**



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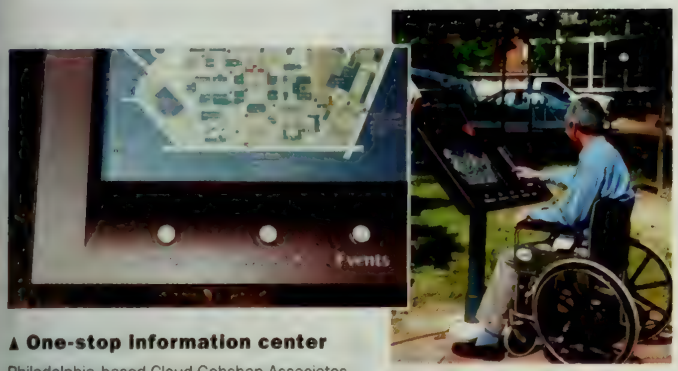
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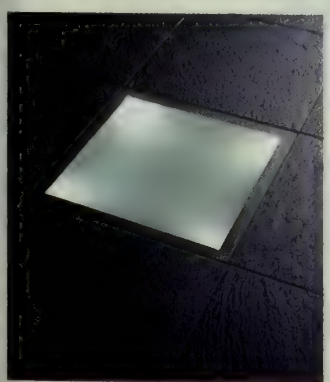
▲ One-stop information center

Philadelphia-based Cloud Gehshan Associates specializes in developing brand identities, research-based signage, and wayfinding systems for its clients. This weatherproof, computerized kiosk was created by the firm to be a one-stop wayfinding and information center for visitors at Johns Hopkins University. The touch of a finger on the aluminum map activates the LCD screen, which presents a building photo, customized map, and directions. Buttons with tactile letters and Braille aid visually impaired users, and concealed microphones and speakers connect visitors to a 24/7 help desk. Cloud Gehshan Associates, Philadelphia. ww.cloudgehshan.com **CIRCLE 221**

► Modern fountain designs

While designing outdoor spaces against the Modernist backdrop of Los Angeles, Studio Four grew frustrated with the selection of outdoor furnishings on the market. The team's exploration of materials led to the design of the Serenity line of planters and fountains. Today, Studio Four designs and fabricates Modern outdoor elements as well as interior and exterior finishes. The Water Line of indoor/outdoor fountains, created by partner Khoi Vo, is available in concrete and aluminum in five distinct designs. Studio Four, Los Angeles. www.studio04la.com **CIRCLE 223**





◄ Luminous panels

GranitiFiandre has expanded its tile and stone product range to include Geologica luminous panels. The panels are designed for installation on floor, wall, or ceiling surfaces. A stainless-steel frame surrounds the structure, which is created with opalescent, tempered glass that can withstand foot traffic. Color options include amber, white, and blue in 12"- or 16"-square panels. The thin panels use four high-intensity LEDs. GranitiFiandre, Itasca, Ill. www.granitifiandre.com **CIRCLE 224**

Product of the Month
Bas-relief Tiles





Utilizing their patent-pending Photo-Cast process, Photo-Form can create bas-relief tiles from any type of two-dimensional image. The process begins when the specifier submits a digital picture or photograph to the studio. Within three weeks time, Photo-Form creates a series of sample tiles in assorted glazes (for ceramic tiles) or finishes (for metal tiles) according to specifications. Upon approval of the prototype, Photo-Form begins production. All tiles are handmade, and a typical order will be delivered in four to six weeks.

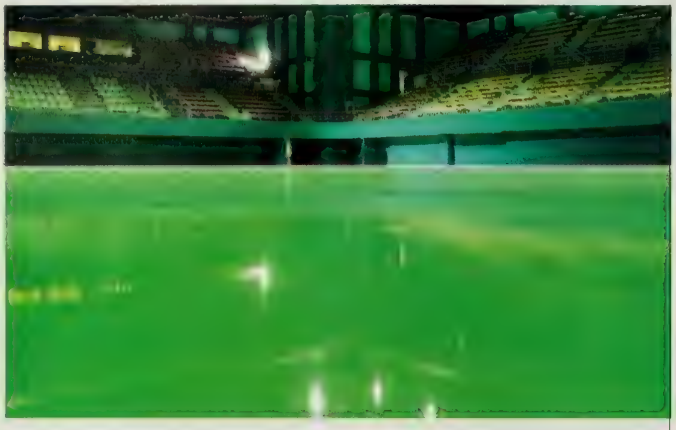
Photo-Form is currently offering the ceramic tiles in 4" x 4", 6" x 6", and 8" x 8" formats. Custom sizes are available with a set-up charge. Gypsum-based tiles can be manufactured in dimensions ranging from 4" x 4" to 8" x 8" with an aspect ratio specified. The gypsum-based tiles must be sealed with a suitable sealer for outdoor use; for indoor applications, the tile should be sealed with wax or a clear acrylic spray to prevent oxidation. While the tiles are for wall applications only, floor tiles will be made available in the future. In addition to ceramic, metal, and gypsum-based tiles, the company works in a range of materials, including rubber, plastic, and clear acrylic. Photo-Form, Scottsdale, Ariz. www.photo-form.com CIRCLE 222



◄ Airplane-inspired airport seating

The Bernú public seating collection takes its name from Daniel Bernoulli, an 18th-century Swiss scientist who discovered the Bernoulli principle, which students of physics and aerodynamics learn is the reason airplanes fly. Constructed of cast aluminum and steel components, its engineering is based on a "peg" system that simplifies assembly and results in a completely modular system. In addition to the usual straight row units, Bernú will be available in curved configurations (left). The closed loop arm is in the shape of an airplane wing in cross section. Upholstery options include vinyl, faux leather, leather, and woven textiles. Arconas, Ontario. www.arconas.com **CIRCLE 225**

Product Briefs



▲ Beating the clock

Flowcrete was challenged to install a 7,546-square-foot, high-performance floor for the Nilai Stadium in Malaysia in just 10 days. To start, the team used the semidry cementitious K-Screed to minimize the moisture content of the base. In order to speed things up further, they applied Flowcem, a cementitious, modified epoxy damp proof membrane (DPM) system. This system enabled the topcoat of Flowshield, a self-leveling epoxy resin, to be installed immediately. Available in gloss or matte finish, Flowshield is hard-wearing, abrasion-resistant, and easy to clean. Flowcrete North America, Houston. www.flowcrete.com **CIRCLE 226**

▼ Smarter faucets

Sloan Valve has added two new "smart" faucets to the market: the Solis solar-powered faucet (below left) and the Optima i.q. sensor-operated faucet (below right). Solis is an electronic solar-powered faucet that operates via ambient lighting. The touch-free faucet's integrated-power-plant storage cell transforms light from any source into electrical energy. Backup batteries can last up to 10 years. Equipped with an intelligent sensor, the Optima i.q. faucet uses up to 70 percent less water than manual-type fixtures and is available with a select-temperature-control adjusting lever. Sloan Valve, Palatine, Ill. www.sloanvalve.com **CIRCLE 227**



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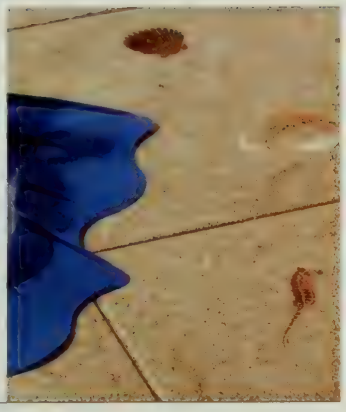
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► Another day at the beach

In response to requests for tiles that convey the feeling of a pristine beach environment, Imagine Tile has added the Beach Series to its line of ceramic wall and floor tiles. Accent shells can be used to highlight a room feature or guide foot traffic. Intended primarily as a floor tile, the collection can also be used on walls and countertops for commercial or residential projects. Imagine Tile, Bloomfield, N.J. www.imaginetile.com **CIRCLE 228**



▼ Luxurious alpaca rugs

Textile designer Rosemary Hallgarten collaborated with Peruvian artisans to produce a collection of floor coverings in alpaca. The collection includes hand-tufted and hand-knotted designs. Roman mosaic tiles washed up on the beaches of Beirut were the inspiration for the Mosaic hand-tufted rug below. Rosemary Hallgarten, Corte Madera, Calif. www.rosemaryhallgarten.com **CIRCLE 230**





▲ Colored and etched glass

Skyline Design's Vitracolor is opaque colored glass for both interior and exterior wall cladding available in 30 standard colors. Recommended for both vertical and horizontal applications, Vitracolor is available in sizes up to 72" x 144" and thicknesses of ¼", ⅜", and ½". Fotoglas is a proprietary process that etches large photographic images into the surface of the glass. Glass choices include plate, tempered, laminated, and insulated glass. The floral design above combines the two technologies. Skyline Design, Chicago. www.skydesign.com **CIRCLE 231**

▼ Design studio door handle

The Cerri #H350 handle is one of the latest door hardware designs in Valli & Valli's Fusital collection. Created by the Italian design studio Cerri & Associates, the handle is available in satin-chrome and polished-chrome finishes and measures approximately 5" long x 2" wide. It will be available in late fall/winter 2004. Valli & Valli, New York City. www.vallievalli.com **CIRCLE 229**



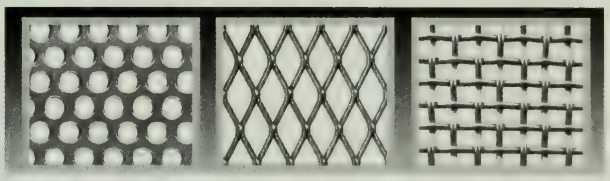
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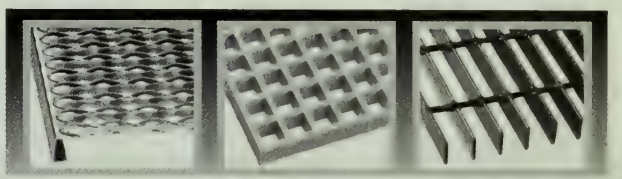
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◄ Energy-efficient wall-panel system

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▼ Cornerstone donation

On July 4th, Innovative Stone's 20-ton granite cornerstone marked the start of construction for the new Freedom Tower at the World Trade Center site in Manhattan. Innovative Stone was chosen to source, cut, polish, and engrave the new cornerstone, which the firm donated to the project. Flecked throughout with crystals of garnet, the official gemstone of New York State, the stone measures 9' long x 5' high x 4' wide. Innovative Marble and Tile, Hauppauge, N.Y. www.innovativestone.com **CIRCLE 233**





▲ Lightweight stacker

Weighing in at 14½ pounds, Nimble is lightweight and can stack up to 36-chairs-high on a cart and 12-high on the floor. Ideal for applications including cafeterias, meeting rooms, libraries, the 100 percent recyclable polypropylene shell is contoured to fit the body, and the back flexes responsively to shifts in seating posture. The chair comes in four solid colors and a chrome or black frame. Allsteel, Muscatine, Iowa. www.allsteel.com **CIRCLE 234**

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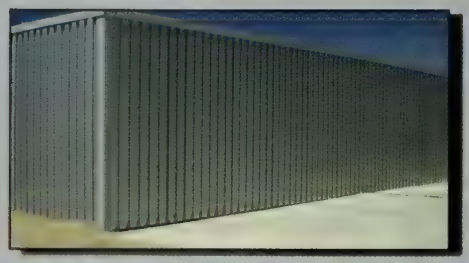
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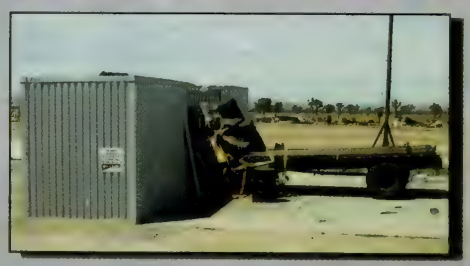
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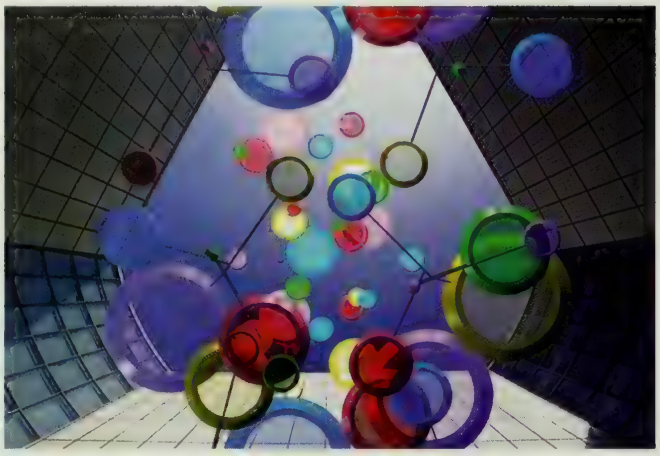
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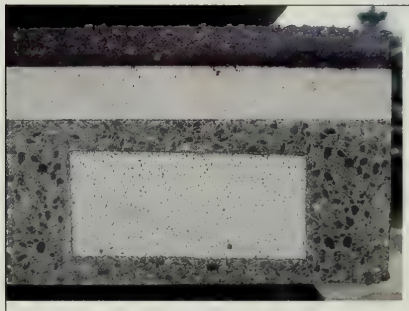
▲ Kinetic sculptures for public and private spaces

Ralfonso (Ralf Gschwend) designs indoor and outdoor 3D kinetic sculptures that move in the wind, water, and by motor for public and commercial buildings and private collections. He also designs sound sculptures, suspended mobiles, and fountains. ExoCentric Spirits (above) is an indoor, suspended mobile featuring colorful disc modules in five different sizes and colors that have color-matched translucent gel lenses. Light from above casts moving color compositions on the floor, as well as colored reflections on the ceiling. RALFONSO.com, West Palm Beach, Fla. www.ralfonso.com **CIRCLE 235**

► Miami-Dade-approved doors



Total Door's Storm Sentry hurricane-rated door system recently passed extensive hurricane testing protocols designed by Miami-Dade County. Total Door claims Storm Sentry is the most cost-effective hurricane door solution on the market. The door is based on a standard full-height, semiconcealed hinge and full-height locking channel designed for superior strength and flexibility. Total Door, Pontiac, Mich. www.totaldoor.com **CIRCLE 236**



▲ Tornado-tough panels

When a deadly tornado tore through northern Indiana, Busk Brothers Furniture was in its direct path. Pre-engineered steel and masonry buildings on both sides were severely damaged or destroyed, but Busk sustained only minor cosmetic damage. The store was built with Fabcon's VersaCore precast-concrete panels, which continuously bond together the tensile strength of steel and the compressive strength of concrete. In addition to being strong, the panels guard against fire without an additional sprinkler system. Fabcon, Savage, Minn. www.fabcon-usa.com **CIRCLE 237**

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Product Literature

Wire-mesh manual

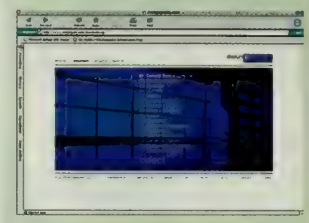
The *GKD Wire Mesh Atlas* is a technical manual in CD format that explains the range of wire-mesh products available from GKD; their specific properties; and the possibilities for processing, installation, and handling of the mesh. The CD provides 10 construction examples, material-specific solutions for planning with wire mesh, more than 90 detailed drawings, 140 photos, and technical data for planning. GKD, Dueren, Germany. www.creativeweave.de **CIRCLE 238**

Italian furnishings catalogs

Four new catalogs from Italian furnishings manufacturer B&B Italia include photos, descriptions, and technical drawings of all the products in the collection. *One Book* includes sofas and armchairs; *Two Book* features furniture systems, living area, and wardrobes; and *Three Book* includes tables, chairs, small armchairs, small tables, and complements. The fourth catalog covers the company's Maxalto division and its Simplice and AC collection of products designed by Antonio Citterio. B&B Italia USA, New York City. www.bebitalia.it **CIRCLE 239**

NEW SITES FOR CYBERSURFING

Online showroom features products and materials for residential and commercial markets. **www.designguide.com**



The Metal Construction Association has added an *Ask the Industry Professionals* feature to their site. **www.metalconstruction.org**

Visitors can design their own virtual restroom. **www.bradleycorp.com**

Redesigned workplace-furnishings site. **www.allsteeloffice.com**

Code update newsletter

Simpson Strong-Tie has launched a new structural-systems and building-safety newsletter entitled *Structural Report*. The purpose of the quarterly newsletter is to provide key customers, including architects, engineers, and code officials, with relevant technical and code updates, quality and safety information, product and industry news, and training opportunities. Simpson Strong-Tie, Dublin, Calif. www.strongtie.com **CIRCLE 240**



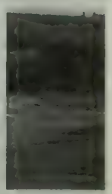
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Product Literature

Contemporary lighting line

To help launch a new collection of American-made contemporary and transitional lighting, Meyda Lighting is introducing a catalog featuring the all-new Metro Line. Also included is a product chart that offers more than 15,000 custom-crafted lighting designs. All products in the line are handcrafted in handsome metal finishes of Brushed Nickel, Craftsman Brown, and Vintage Copper. Made in the U.S., the line includes pendants, torchères, table lamps, and wall sconces. Meyda Tiffany, Yorkville, N.Y. www.meyda.com **CIRCLE 241**

Presentation product catalog

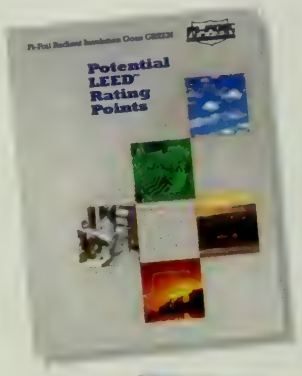
Da-Lite Screen Company has announced the release of its latest products catalog, *The Power in Presentation Products.* This 154-page catalog contains a comprehensive line of presentation products that have been divided into 12 sections. Each section contains detailed information on a specific presentation product line as well as educational information on selecting the correct projection screen for every environment. Da-Lite Screen Company, Warsaw, Ind. www.da-lite.com **CIRCLE 242**

LEED potential

Fi-Foil's new brochure highlights the advantages of using reflective insulation in sustainable construction for both commercial and residential structures and addresses Fi-Foil's potential contribution to LEED-certified projects. Fi-Foil's reflective insulation products boost energy efficiency in masonry walls, vertical wall cavities, roofs, and floors in both new and existing buildings. This is achieved by a reduction of heat flow and significant reduction in the transmission of radiant heat flow. Fi-Foil Company, Auburndale, Fla. www.fifoil.com **CIRCLE 243**

Plywood standard changes

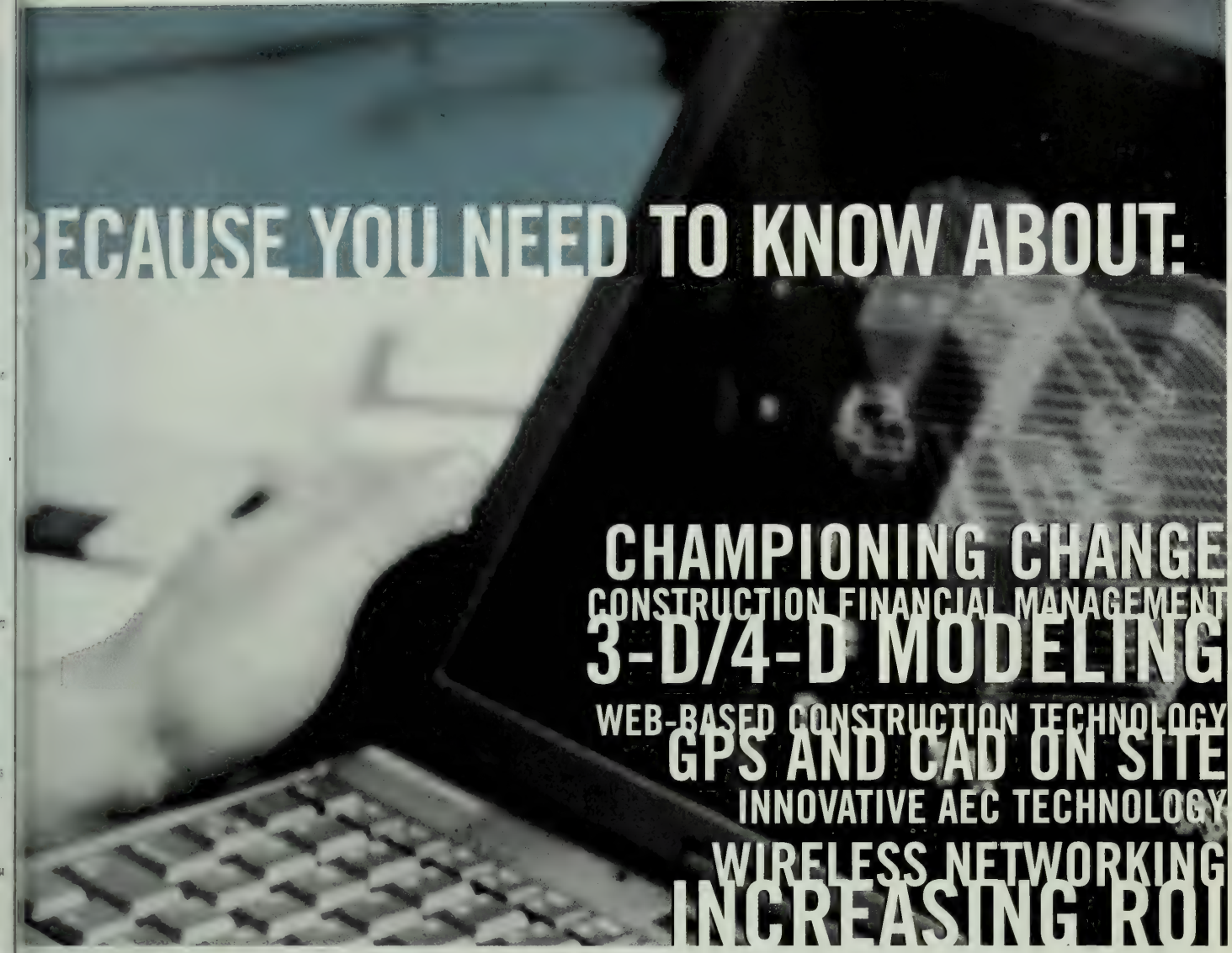
The Hardwood Plywood and Veneer Association (HPVA) has released an updated version of the *American Standard for Hardwood and Decorative Plywood* that contains a number of significant changes since the standard was last updated in 2000. The new standard includes the addition of completely new and separate tables of grade requirements for door faces and adds, revises, or clarifies the definitions of a number of terms related to hardwood plywood panels. HPVA, Reston, Va. www.hpva.org **CIRCLE 244**







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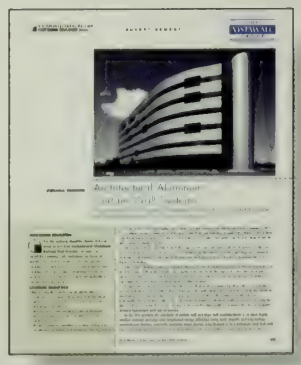
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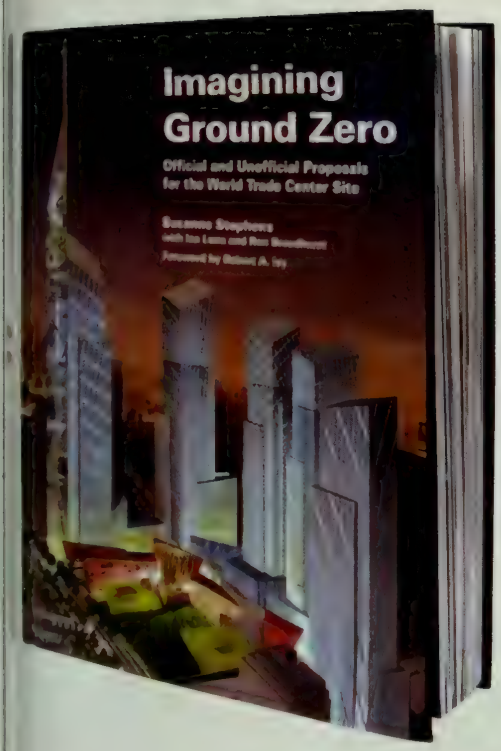


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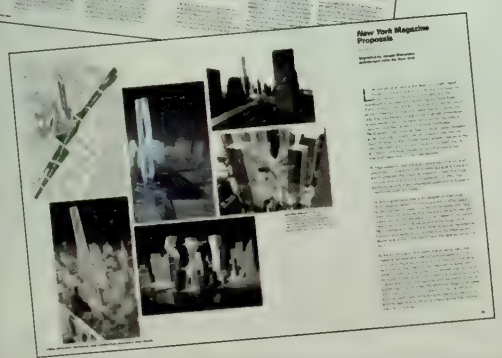
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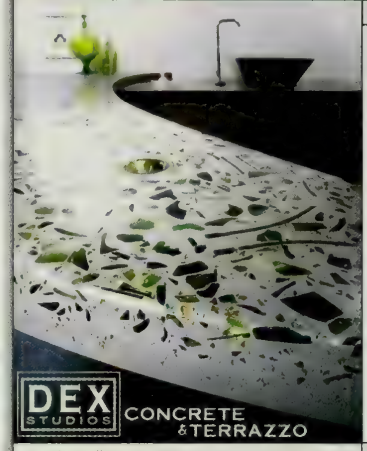
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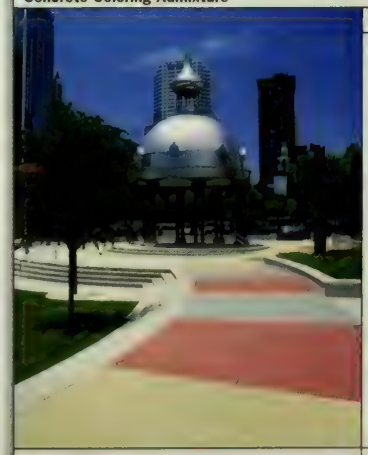
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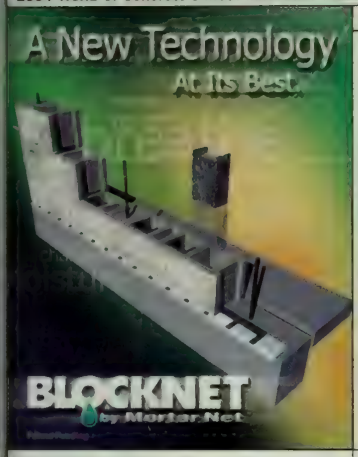
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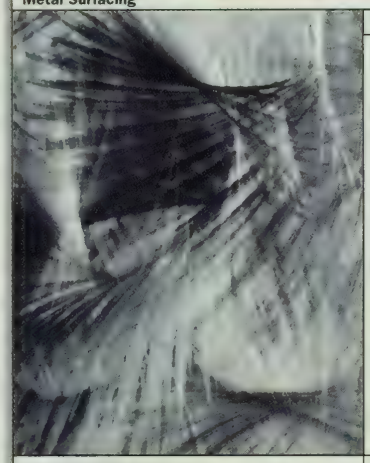
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EPIC Metals Skydeck™ option was designed to incorporate natural lighting into structural, long-span roof deck ceiling systems without the need for additional steel framing. By featuring Solatube® technologies, the EPIC Skydeck option provides the brightest, cleanest, and whitest light possible while minimizing solar heat gain and glare. Skydeck supports green building philosophies by reducing the need for electrical lighting and conserving energy costs that contribute to LEED certification. Additionally, Skydeck can be specified with an acoustical option to reduce interior ambient noise levels, can span up to 55-ft., and has a variety of appearance options to complement any architectural design.

www.epicmetals.com | 158

HDI Railing Systems

Nylon Railing System | 717-285-4088

5 Metals



Add color and strength to your project with a nylon guardrail system. Nylon-coated railings come in a range of attractive colors and wood finishes. They provide exceptional structural strength, chemical resistance, hygienic qualities, and are virtually maintenance free. Infill materials are available in tempered glass and perforated metal. Handrails in colored nylon and solid wood. Standard and custom designs are available. Complete supply and installation service is available throughout North America, which includes *inox*™, CIRCUM™, HEWI® Nylon, and d line™ railing systems. Email info@hdirailings.com.

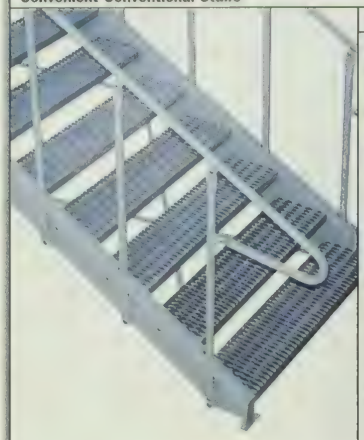
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Lapeyre Stair Inc.

Convenient Conventional Stairs



5 Metals

In addition to its unique alternating tread safety-stair products, Lapeyre Stair now provides in-house design and fabrication of conventional industrial stairs that are designed and built to order. With proprietary computerized design capabilities and a facility dedicated to stair fabrication, Lapeyre Stair can offer unprecedented one-stop-shopping convenience, low prices, and lead times of three weeks or less. Check the Web site for conventional stair product updates and technical information, plus interactive features related to Lapeyre's Alternating Tread Stair: downloadable CAD files, online pricing, and more. In space-squeezed applications, the Lapeyre Alternating Tread Stair provides safer, easier access than vertical or ship's ladders.

www.lapeyrestair.com 162

Melton Classics, Inc.

Architectural Products



6 Wood & plastics

Melton Classics provides the desig professional with the most compreher sive selection of quality architectur products in the industry, including arch tectural columns, balustrades, molding cornices, and a wide array of architec tural elements. Architectural column are available plain or fluted, load-bearin or column covers, round or square fiberglass, fiberglass/marble composite synthetic stone, cast stone, GFRC, an wood for paint or stain. Melton Classic offers a maintenance free balustrad product ideal for any application Balustrades are available in four durabl materials: MarbleTex™ synthetic ston poly/marble composite, cast stone, an polyurethane, and can meet any code radius application.

www.meltonclassics.com 165

Fiberglass Specialties, Inc.

Custom Fiberglass Products



6 Wood & plastics

Fiberglass Specialties Inc. manufactures custom architectural products from FRP fiberglass. Custom products are often less than stick-built structures and arrive at the job site pre-ready to install. 2004 projects range from the replication of a 130-ft. historical lighthouse (with a full size cellular tower inside) to a custom cupola with a unique analog wind gage for a residential application. Each custom structure is designed around a tubular steel unitized body with architectural FRP panels affixed. Almost any size, shape, or texture can be replicated. Custom colors are available, and because they use low styrenge gel coats, yellowing, fading, and chalking are minimal. In-house architect (AIA) and design engineers are available.

www.fsiweb.com 163

Panel Source International Inc.

Fire-Retardant Particleboard, MDF & Plywood Panels 877-464-7267



6 Wood & plastics

Pyroblock® Class A fire-retardan particleboard, MDF, and Plywood Formaldehyde- free, FSC certified recycled or rapidly renewable fibers Pyroblock is ideally suited for th AEC community working on LEED registered projects. Pyroblock i available in numerous thicknesse and sizes; availability is not a prob lem when you specify Pyroblock.

www.panelsource.net 166

Laser Precision Cutting, Inc.

Brackets, Plates & Gussets 800-514-8065



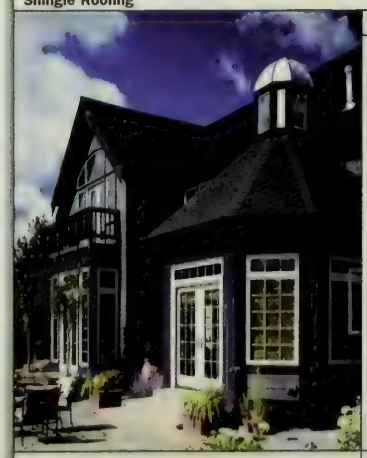
6 Wood & plastics

Needed these parts yesterday? Laser Precision Cutting, Inc. provides fast and accurate service for both your decorative and structural needs. Normal lead times are 5 to 10 days. If your needs are fast, E-mail your dxf files to Laser Precision Cutting, Inc. The Web site has many more examples of Laser Precision Cutting, Inc. work. An ISO-9000 registered company. Email lasercutting@mindspring.com. Fax number 828-645-8421.

www.laserprecisioncutting.com 164

CertainTeed Corporation, Roofing Products Group

Shingle Roofing 800-233-8990



7 Thermal & moisture protection

Presidential TL™, with its sculpted rus tic edges, is constructed using thre laminated layers of the industry' strongest, most durable materials making it one of the thickest, toughes and best looking shingles on the mar ket. The beauty of a wood shake wit less cost and better performance Email roofing.ct@saint-gobain.com.

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CertainTeed Corporation, Roofing Products Group

Slate Roofing | 800-233-8990



7 Thermal & moisture protection

CertainTeed's Centennial Slate™ replicates the natural color variations of true blended slate at a fraction of the cost. Through a sophisticated, patent-pending production process, CertainTeed precisely applies color to individual tabs to create its distinguished look. Centennial Slate is available in six colors and utilizes CertainTeed's exclusive Super Shangle® construction.

www.certainteed.com | 168

General Glass International

Fire-Rated Glass



8 Doors & windows

In response to the changes in the IBC 2003 building codes, General Glass International has introduced Pyroshield Plus™, a laminated, polished-wire glass manufactured by Pilkington Glass UK. This new fire-rated glass product meets CPSC 16 CFR 1201 Category I impact safety standards. Pyroshield Plus uses a plastic fireproof interlayer strong enough to meet Cat I requirements. It achieves a 45-min. plus hosestream rating, along with an 18-in. drop-height performance rating, both from either direction. The overall thickness, 10.5mm, and the stock size, 49-in. by 78-in., allow Pyroshield Plus to be used in most frame systems currently in the market. Pyroshield Plus is a cost-effective alternative to other fire-rated glass options.

www.generalglass.com | 171

Cornell Corporation

Performance Roofing Insulation | 715-239-6411



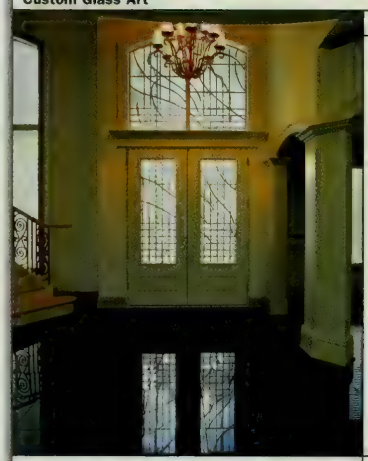
7 Thermal & moisture protection

Cornell Corporation introduced the original ventilated roof insulation, Vent-Top Thermacal, in 1987. Today's Vent-Top Thermacal is designed for fast installation and high performance. Panels are fully machined with pre-spaced sheathing and tongue and groove edges for minimal heat loss. Upventing is greater than 92% while leaving 50% open area for lateral ventilation. R-values up to 42 are available. Thermacal non-vented nailbase insulation shares the machined features of our ventilated products with R-values up to 47 available. CVRS (Cornell Ventilated Roof Sheathing) is a ventilated sheathing as a solution for roof venting over existing insulation. Email cornell@centurytel.net.

www.cornellcorporation.com | 169

Jerome R. Durr Studio

Custom Glass Art | 800-552-9836



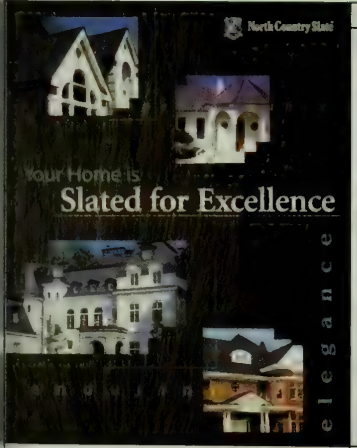
8 Doors & windows

Jerome R. Durr Studio, providing residential, liturgical, commercial, and public art since 1973.

www.jeromedurr.com | 172

North Country Slate

Slate Roofing Brochure | 800-975-2835



7 Thermal & moisture protection

North Country Slate offers a new brochure explaining the design and performance advantages of their remarkable roofing material to your residential customers. In six glossy pages, "Slated for Excellence" presents all the features and benefits to your client, the homeowner. Make sure you have this brochure on hand for your next discussion on slate roofing. Email info@ncslate.com.

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Technical Glass Products

Fire-Rated Steel Framing



8 Doors & windows

Technical Glass Products offers the Fireframes™ Curtainwall Series—fire-rated steel framing for large expanses of glass spanning multiple stories. Available for interior or exterior use, the Curtainwall Series carries fire ratings up to two hours. Custom exterior face caps allow a wide variety of appearances, including stainless steel. For more information visit the company's Web site.

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Unicel Architectural Inc.

Pivoting Blinds



8 Doors & windows

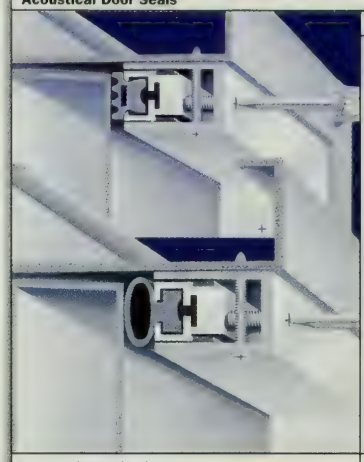
Unicel Architectural Inc. has developed a unique patented glazing product: Vision Control®. With this custom-designed unit, you can finally enjoy total control of light, privacy, and sound without having to worry about the cleaning. Unlike ordinary Venetian blinds installed separately from the glass, Unicel's pivoting blinds made of extruded aluminum are mounted inside a hermetically sealed glass unit offering you 100% dust-free and germ-free louvered glazing. Vision Control blinds are operated using a small hand crank, thumbwheel, motorized switch, or computer: control at your fingertips, cord-free and string free. Ideal in partitions, doors, sidelights, windows, skylights, and more.

www.visioncontrol.qc.ca

174

Zero International, Inc.

Acoustical Door Seals 800-635-5335



8 Doors & windows

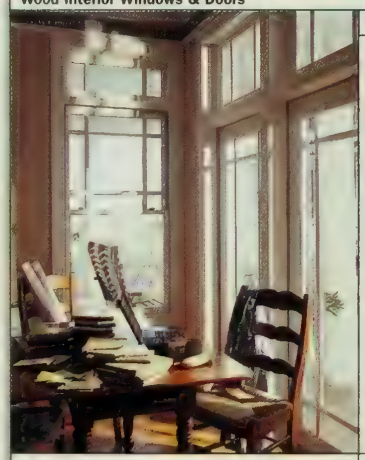
Zero's acoustical door seals and sy tems are designed with top-quali materials and adjustable features guarantee easy installation, reliab performance, and sound transmissio class ratings up to 51 STC for the mo demanding noise-control applicatio Engineered to function efficient through millions of cycles. Vision-lig systems available. Zero's adjustab gasketing systems lower noise leve and provide privacy in office building apartment houses, hospitals and do tors offices, churches, and schools. F more information and a copy of Zero 20-page "Sound Solutions" brochur contact Zero International.

www.zerointernational.com

17

Weather Shield Windows & Doors

Wood Interior Windows & Doors



8 Doors & windows

As the flagship line for upscale homes, Weather Shield is the company's most comprehensive line of windows and doors. Weather Shield windows and doors feature wood interiors and are available with either an extruded aluminum exterior or a wood brick mould exterior. Windows and doors come in ten long lasting Flexicolor exterior finishes, and are available in any of seven different wood species from the Custom Wood Interiors Collection™.

www.weathershield.com

175

Crossfield Products Corp.

Architectural Floor Surfacing



9 Finishes

Dex-O-Tex Micro-Topping is a thi section, seamless polymeric floor su facing that offers years of durability ar low maintenance costs. The protecti surfacing is less moisture sensiti than conventional sheet and tile floorin and provides an attractive, wea resistant finish. Micro-Topping can b applied over a wide range of surface eliminating the cost of expensiv removal. It can be antiqued or chem cally stained with many beautiful colo to create a variegated shading of hue and allows the application of stenci and saw-cuts for limitless desig options. A wide range of polyurethan sealers with varying degrees of gloss slip-resistance will stand up to repeate floor cleanings.

17

Woodfold-Marco Mfg., Inc.

Doors Designed for Hospitality 503-357-7181



8 Doors & windows

Woodfold's custom made folding and roll-up doors serve multiple functions for hospitality design. With models available for sight, security, and acoustic control, Woodfold's accordion doors effectively divide your space. Its roll-up doors, used in the back bar, allow immediate and secure lock-up at closing time. Complete architectural binders available upon request. Fax number 503-357-7185.

www.woodfold.com

176

L. M. Scofield Company

Concrete & Cementitious Flooring 800-800-9900



9 Finishes

Stylish Scofield flooring systems: Fo beauty and durability, concrete an cementitious toppings provide stylis flooring for high traffic areas offices, lobbies, public spaces, foo service, and retail areas. Scofiel Systems offer diverse choices—rang ing from monochromatic toppings t translucent, antique stains for fau finishes and dramatic graphics. Ema info@scofield.com.

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Viva Ceramica

Xilo Flooring



9 Finishes

Colors meet the purest clays forged and pre-compacted in a higher than normal thickness (12mm). Complete penetration between body and color grants lasting optical results, maximum ultimate tensile strength, and absolute resistance to acids, scratches, frost, and dirt. This totally environmentally friendly manufacturing process is assured by ISO9001 quality system. Certified plant of E milceramica in Fiorano Modenese; series XILO is guaranteed 20 years for private homes and 10 years for public areas. For further information please consult Viva for updated price list and sales conditions.

www.cerviva.it 180

Kroy Sign Systems

Aluminum Sign Frames



10 Specialties

Kroy Sign Systems, Scottsdale, AZ, is a leading manufacturer of architectural and ADA compliant signs. Specializing in design/build sign fabrication and sign wayfinding systems, Kroy recently introduced SPECTRUM sign frames. Durable aluminum frames are available for interior and exterior sign applications. Kroy's SPECTRUM Sign Series features lightweight, thinline aluminum extrusions in a variety of frame sizes and unlimited colors. Square, radius, and beveled edge profiles are designed to accommodate a host of architectural and ADA sign insert materials. SPECTRUM frames accept photopolymer faceplates, acrylic lenses, and aluminum inserts. Visit the company's Web site for more info.

www.kroysignsystems.com 183

Custom Home Accessories, Inc.

Decorative Cluster Mailboxes



10 Specialties

Tired of the same old ugly gang style mailboxes? Give your community some "curb appeal" with the new Regency decorative cluster mailbox unit. Constructed of cast aluminum and stainless steel, the elegant mail center is designed to last. Existing CBU's can also be easily converted to a Regency. This system comes in a variety of styles, colors, and configurations. Custom Home Accessories, Inc. offers a full line of mailboxes, address plaques, bronze markers, and street signs.

181

New Holland Church Furniture

Curved Church Pews 800-220-1465



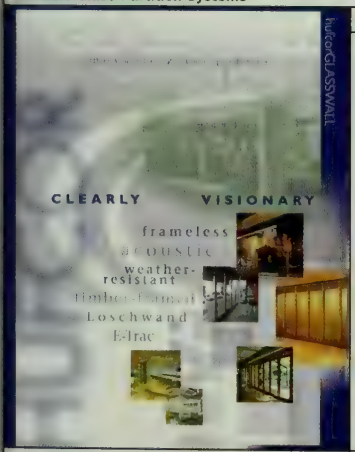
12 Furnishings

Curved pews are "Round For A Reason"™ and are designed and manufactured by New Holland Church Furniture. Curved pews are designed for maximum seating, curved for efficient use of space, designed to enhance worship, created for community, uniting the family of God. New Holland Church Furniture is a certified member of the Architectural Woodwork Institute (AWI), so you can be assured of the very highest quality. Email nhcw@newhollandwood.com.

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Hufcor, Inc.

Movable Glass Partition Systems 800-542-2371



10 Specialties

Hufcor introduces a complete new line of movable glass partition systems featured in a new brochure. The line features frameless storefront style panels with patent-pending batwing passdoors, acoustic and weather resistant glasswalls without floor tracks, woodclad products, and electrically controlled E-Trac tracking system and Loschwand overhead systems. Call or visit the Web site.

www.hufcor.com 182

FabriTec Structures

Tensile Fabric Structures 866-275-9710



13 Special construction

FabriTec Structures introduces a new generation of tensile fabric technology. Its highly specialized fabric structures utilize the most advanced architectural materials available and are non-combustible, both thermal- and UV-resistant, and can offer full weather protection. With virtually unlimited design options and applications, FabriTec's products are both practical and often visually spectacular. Designers can choose fabrics from a wide range of color and translucency and enjoy a cost effective and "fast-track" alternative to conventional building systems. FabriTec Structures provides clients with complete design/build services, including concept development, engineering, fabrication, project management, and installation.

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Finlandia Sauna Products, Inc.

Precut Saunas — 800-354-3342

13 Special construction



Finlandia Sauna has manufactured exclusive and authentic saunas since 1964. Finlandia offers precut sauna packages and modular sauna rooms as affordable luxuries that can be included in any remodel or new construction. The company markets four all-clear western softwoods and is the only manufacturer to use 1-in. by 4-in. paneling, instead of the cheaper 1/2-in. by 4-in. material used by others. Finlandia's packages include all room parts, a choice of a Finnish-made electric heater, a prehung door with choice of glass, and all necessary accessories. Finlandia's exciting new heater, the EverReady, is an excellent option for the person always on the go. Fax number 503-684-1120. Email info@finlandiasauna.com.

www.finlandiasauna.com — 186

Shaper Lighting / Cooper Lighting

Custom Lighting Fixtures

16 Electrical



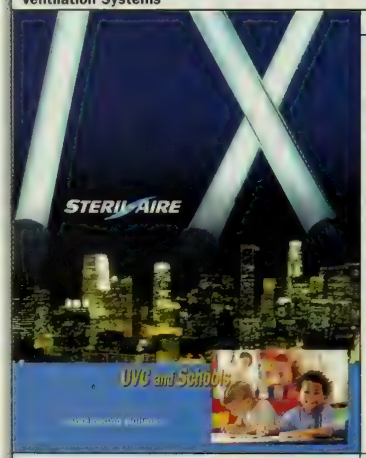
Shaper's new 674 Wall Luminaire shown here in solid brushed stainless steel, is also available in natural aluminum, polished brass, satin brass or hand-oxidized brass. Custom color and design options, such as perforated stainless or color inserts are also available to compliment any commercial, hospitality, or retail application. Visit their Web site or E-mail talktous@cooperlighting.com.

www.shaperlighting.com — 189

Steril-Aire

Ventilation Systems — 800-2STERIL

13 Special construction



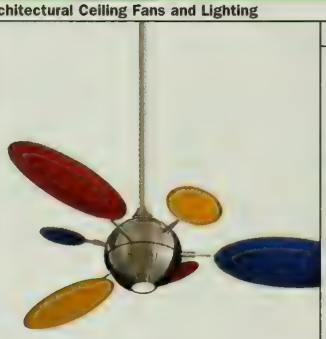
New bulletin showcases Steril-Aire UVC Emitters™ for mold and microbial control in schools. The multi-patented devices reduce spread of infectious diseases by 90% plus for reduced absenteeism. They also stop mold problems and relieve allergy/asthma symptoms triggered by mold spores. In addition, they save 15% or more in energy costs and slash A/C coil cleaning costs. The company offers a full line of UVC products for school installations, ranging from central A/C systems to unit ventilators, fan coils, and other packaged systems. Fax number 562-467-8481. Email sales@steril-aire.com.

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G-Squared

Architectural Ceiling Fans and Lighting — 877-858-5333

16 Electrical



Enjoy art... the Cirque ceiling fan, a high performance dynamic sculpture, Good Design Award winner. View silver and mahogany blade versions on their Web site. Includes 50 W dimmable light and touch control system, remote control available. Whisper quiet, powerful, and beautifully made, this timeless design can be used on 8-ft. ceilings or on cathedral ceilings with optional down rods up to 6-ft. long. Suitable for sloped ceilings. Lifetime warranty. To buy high design architectural fans and lighting, please visit G-Squared's Web site or call between 6 AM and 6 PM PST.

www.g2art.com — 190

Ledalite Architectural Products

Lighting Systems

15 Mechanical



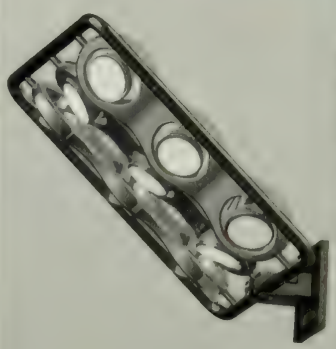
PureFX™ is a revolutionary recessed lighting system that utilizes Ledalite's MesoOptics® technology to purify and control light. It offers the perfect blend of brightness, control, and energy efficiency—making happier people and a healthier environment. Visit the Ledalite Web site for more information and to view the PureFX multimedia presentation.

www.ledalite.com — 188

Prima Lighting Corp.

Light Fixtures — 866-885-4915

16 Electrical

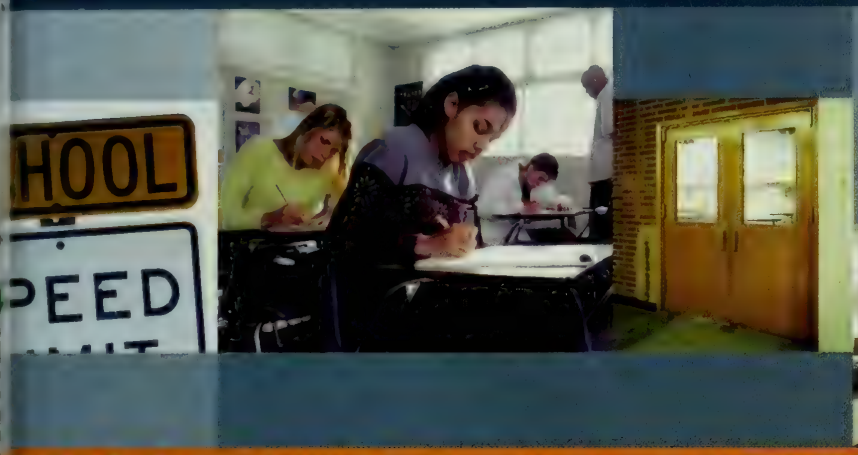


The Multi light fixture series gives you complete freedom and control over your light source with high-end, elegant, and intriguing style. Easily direct the light exactly where you want and tailor the power to your needs. Choose a nine, six, four, three, or two light configuration available as a wall (shown), pendant, floor, or table light. Chrome and matte silver finishes. Clean, architectural multipoint canopies are available for the pendants. Please visit Prima Lighting's Web site or call to find out more about its breakthrough OPUS line of contemporary architectural lighting.

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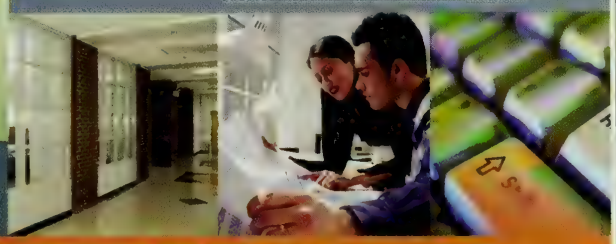
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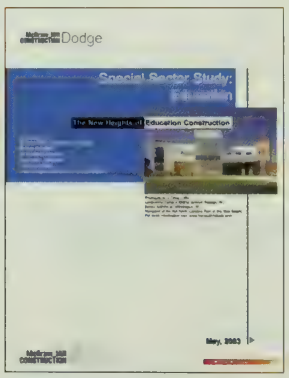
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BS in Architecture & 2yrs exp in AutoCAD 2000, freehand graphic presentation, graphic s/w including photoshop, CorelDraw, Powerpoint & Computer 3D modeling & rendering. Resume to William+Paddon Architecturs+Planners, 2237 Douglas Blvd,#160, Roseville, CA 95661. Attn: HR. EOE.

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Chase Rynd: At the helm at the National Building Museum

Interviewed by Andrea Oppenheimer Dean

Chase Rynd's knowledge of architecture was negligible in July 2003 when he became president and executive director of Washington, D.C.'s National Building Museum. He says his background as a fine arts museum administrator, promoter, and financial manager decided his selection. Rynd began his career as an investment analyst and portfolio manager in New York City. In 1976, he moved to Seattle, joined an investment firm, and—marrying a love for art with managerial skills—launched the Equivalent Gallery. His work consulting for museums, private collectors, and corporations led to his appointment as chairman of the Seattle Arts Commission and, later, to his position as executive director of the Tacoma Art Museum. Named founding executive director of Nashville's Frist Center for the Visual Arts in 1998, Rynd secured the center's financial health by attracting sponsors, and helped give it cultural credibility by forging partnerships with national and international arts organizations.

Q: *Your experience has been with fine arts museums. What surprises did an architecture museum present?* I thought the building arts were about structure and function, with aesthetics slapped on. I spent all my life being blown away by visual artists and didn't know how creative and disciplined you have to be to blend structure, function, and aesthetics. My transition wasn't as easy as I anticipated. At the building museum, we look at all the building arts: engineering, urban planning, and historic preservation—I feel like I'm immersed in intense postgraduate study.

The museum building, constructed to house the U.S. Pension Bureau in 1887, resembles a rust-red Renaissance palazzo. Does it pose problems as a museum? The building is our toughest challenge. It makes events hard to produce. When you first come into the five-story Great Hall, it's a thrill, but it's also disorienting. You don't know where to go, what to do, what's going on. We want to carve out a space on the main floor for visitor orientation. One goal is to refurbish our auditorium, an embarrassing space. And raising funds for our $8 million annual budget is never easy.

How do you explain that attendance figures for 2004 exceed last year's by 20 percent? People are venturing back to D.C. after 9/11, and school trips are back. We've gotten enormous attention from the press, which translates into attendance. The redevelopment of downtown Washington has also raised our figures. Now there's a lot to attract people: the Science Museum, the Spy Museum, the MCI Center [sports arena], and a vibrant new neighborhood.

What kinds of exhibitions and programs are most popular? We are a culture of celebrity, and the better known the lecturer, the higher the attendance. But issue-oriented programs are also a big draw. Our affordable-housing exhibition had excellent attendance, as did our show on Washington's Anacostia River and its environs.

And the future? We've done a good job of speaking to the professions; we haven't been as strong addressing a broader audience. We need to gear exhibitions and education to more varied points of view, and I want to develop an interactive gallery where people can learn the vocabulary, issues, and importance of the building arts. Our overarching direction is toward greater national recognition through developing partnerships with other institutions around the country. We're intent on contributing research and original ideas about the built environment, rather than just using other peoples' ideas.

Photograph by Matthew Girard

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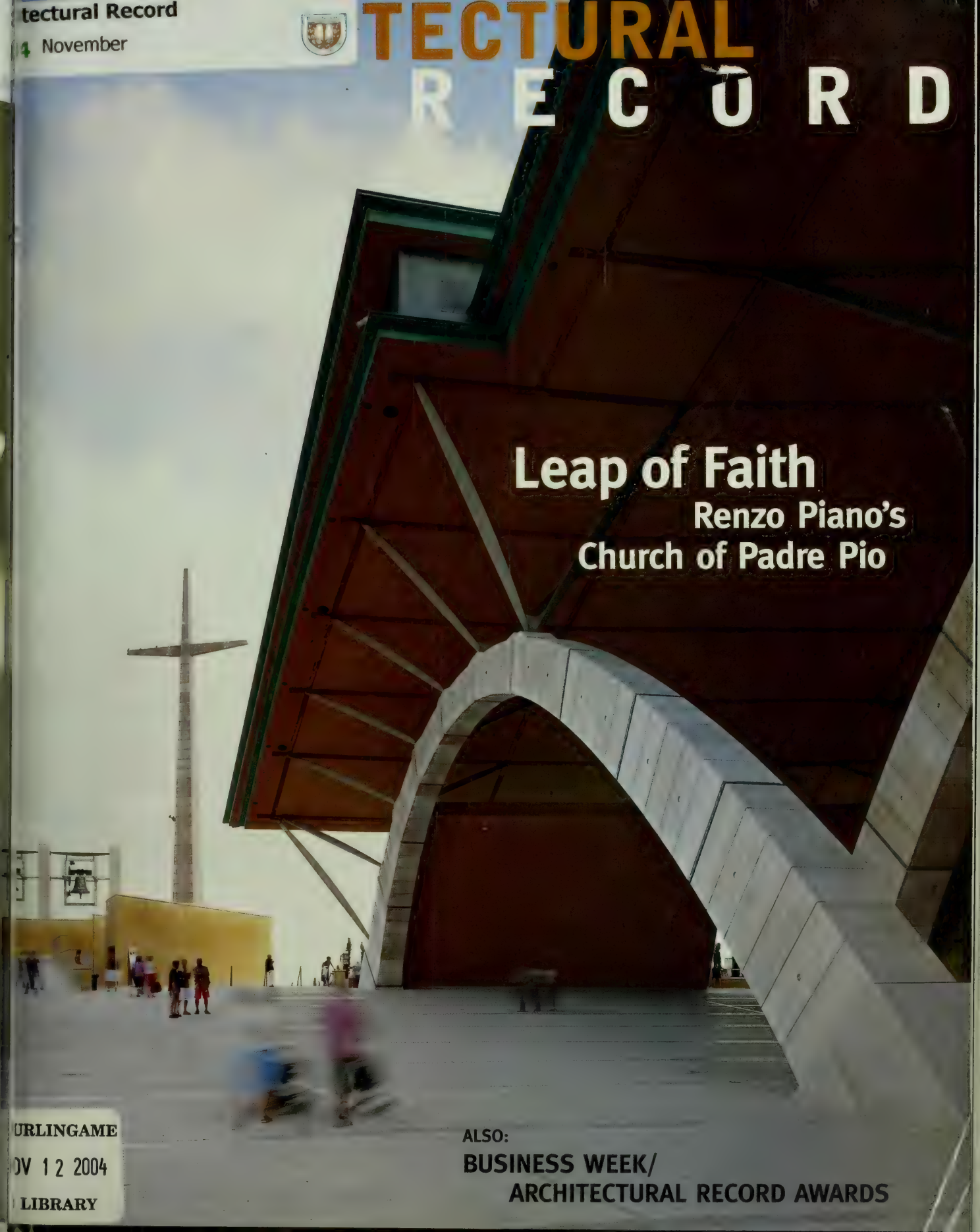


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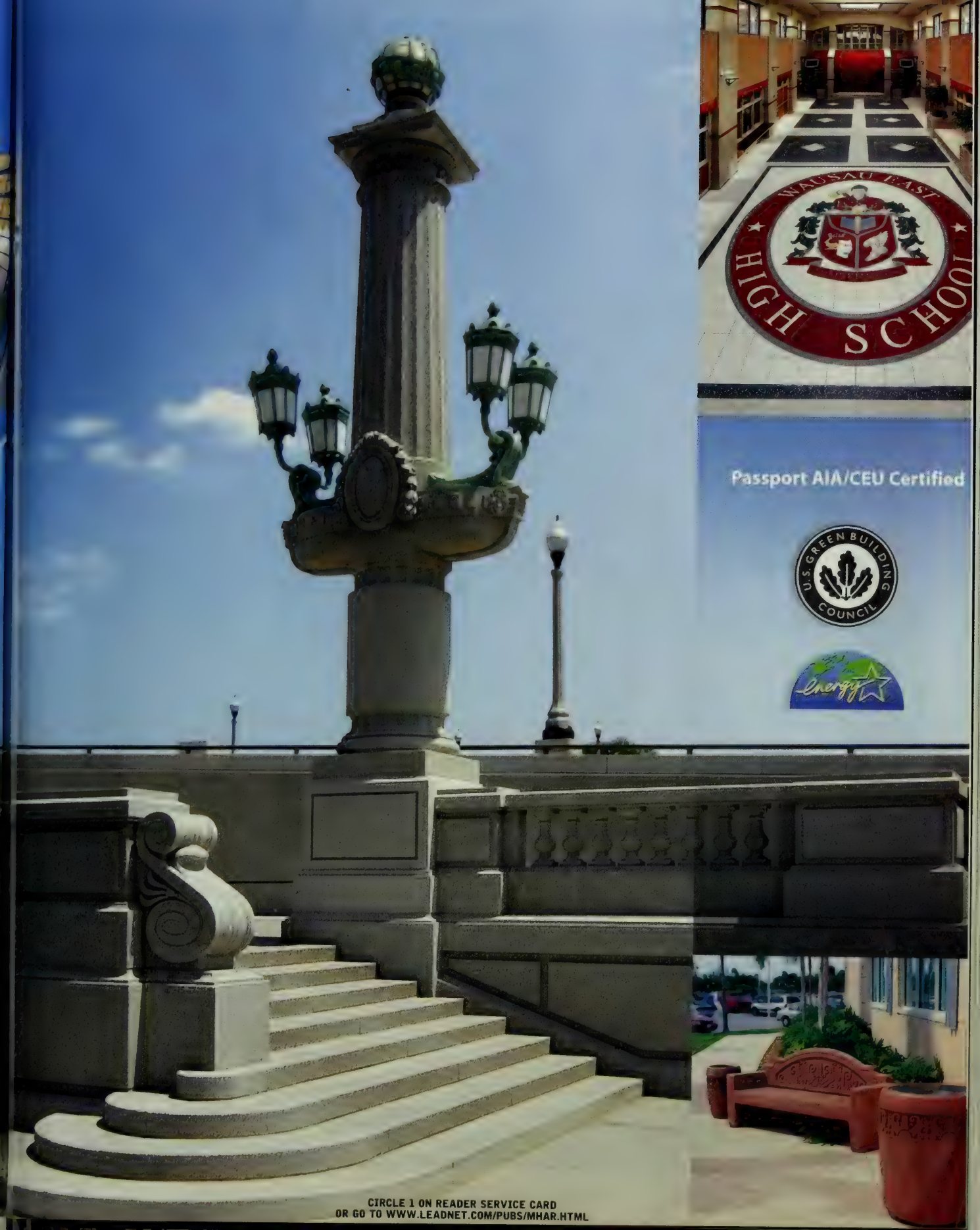
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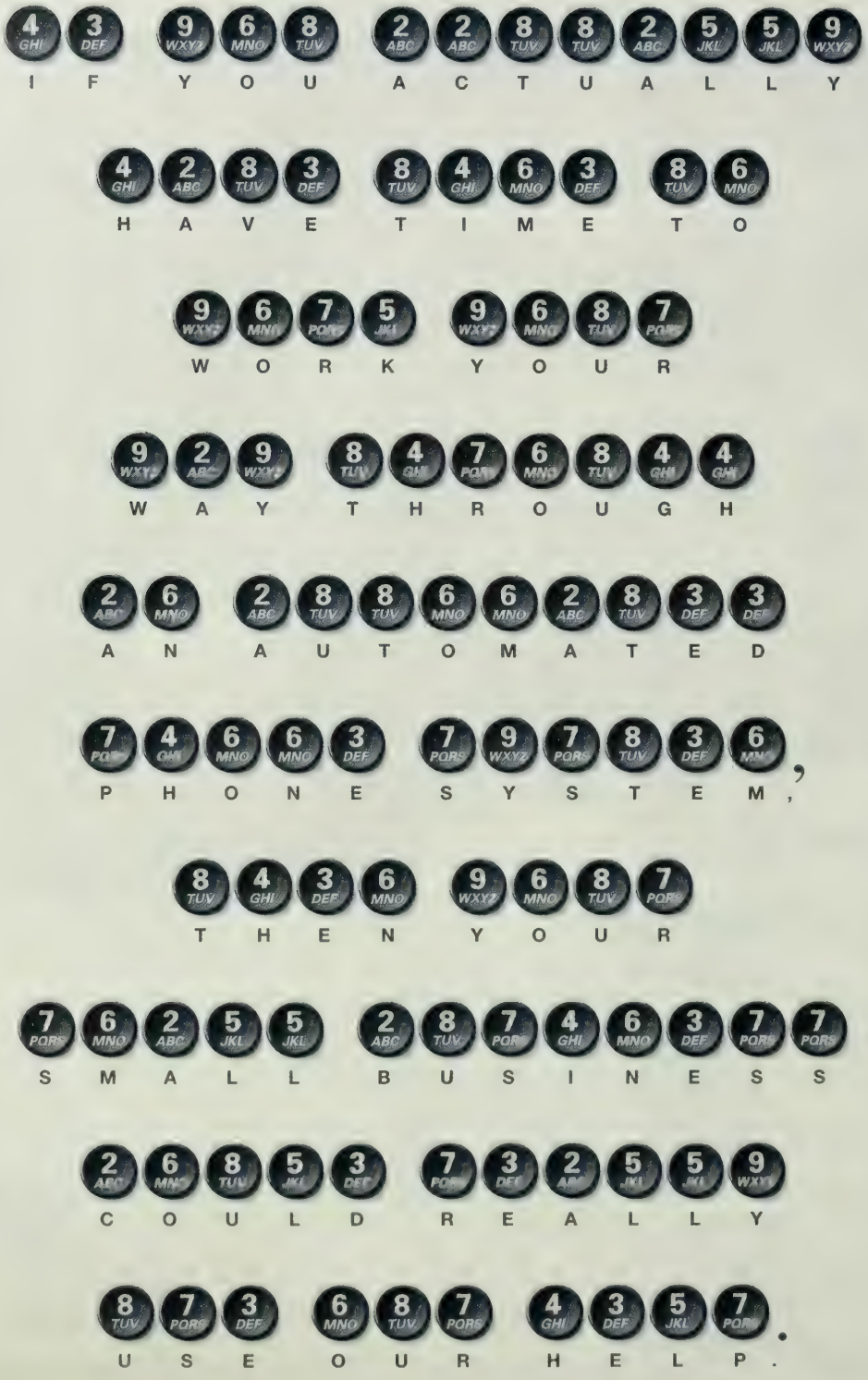
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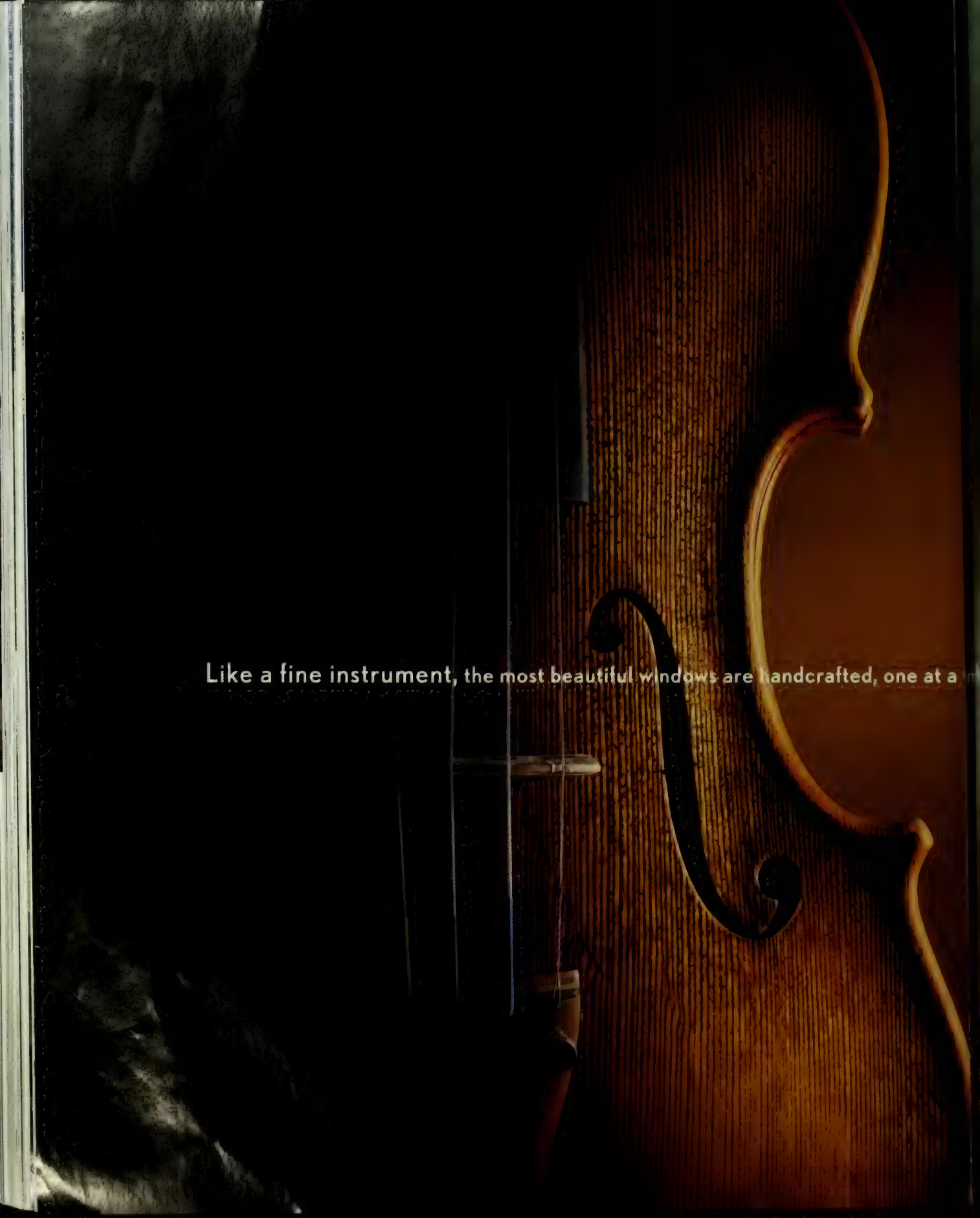
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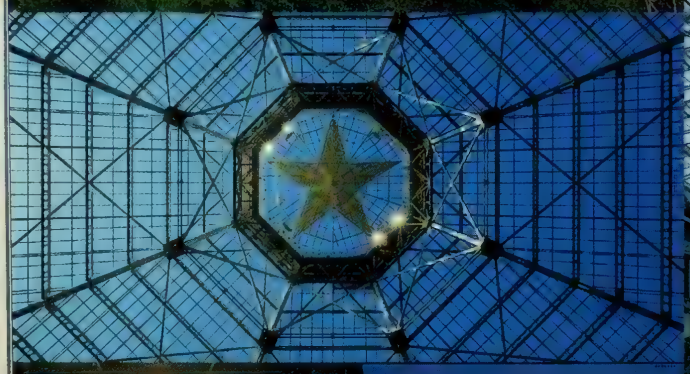

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Right: *Liberal Arts and Science College, by Kazuhiro Kojima + Kazuko Akamatsu/C+A. Photograph by Shinkenchiku-sha*

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* You can find these stories at **www.architecturalrecord.com**, including expanded coverage of Projects, Building Types Studies, and Web-only special features.

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In our 8th annual *Business Week/Architectural Record* Awards we recognize the design solutions that enhance business success. Have a look at the 10 winners that span the globe and include an urban center New Zealand, a foreign ministry in Israel, and an athletic facility in Japan. Also included in our coverage are nine finalists and the editors' choices.

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Venice Biennale

Our Web site provides you with an insider's look at the U.S. Pavilion and the talented young architects that made the show a success. You'll find opening-party pictures and audio commentary from the participating architects.



Japan Library, Competition Entry, 2003
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Equinox at Columbus Circle, New York City
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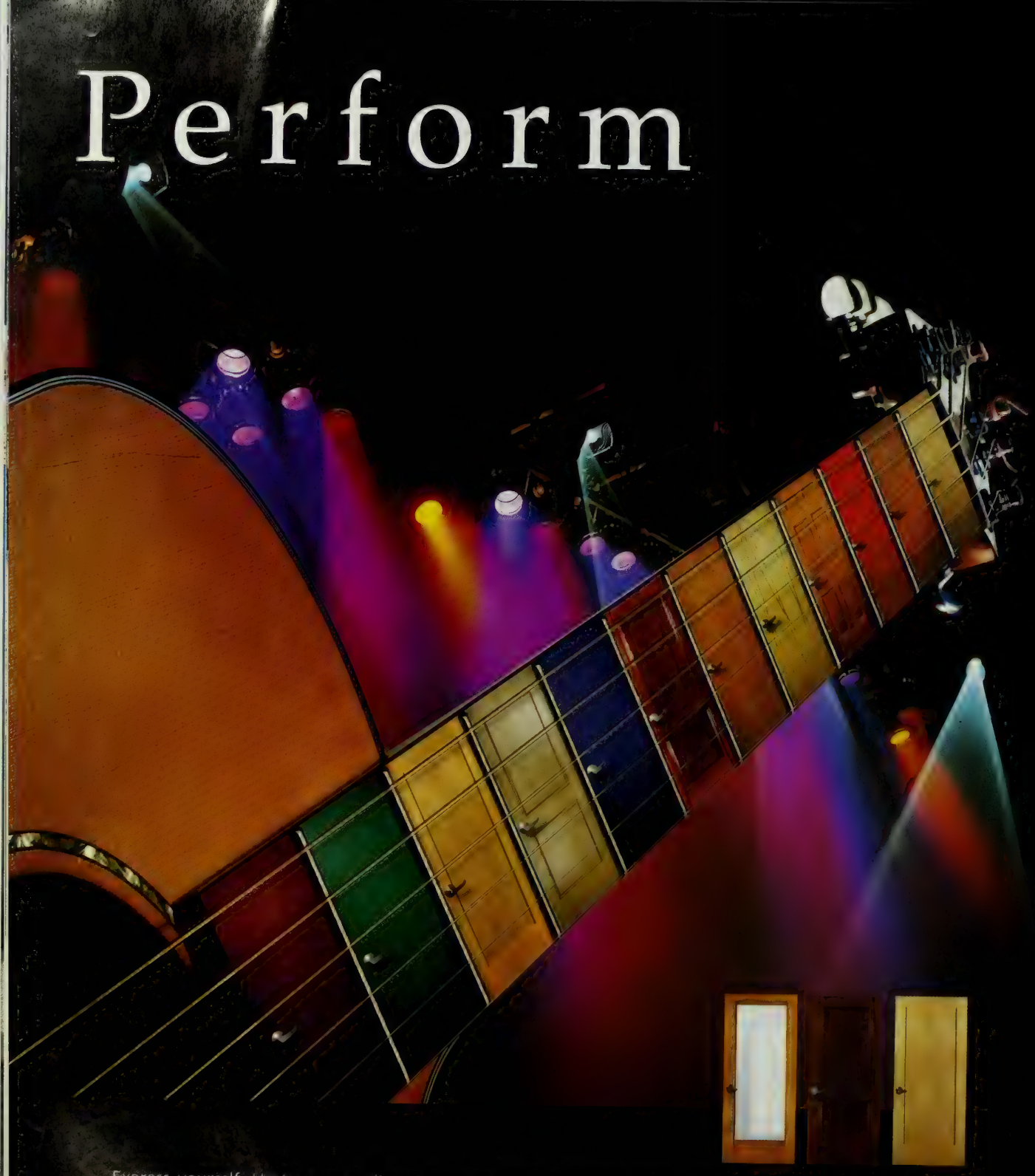
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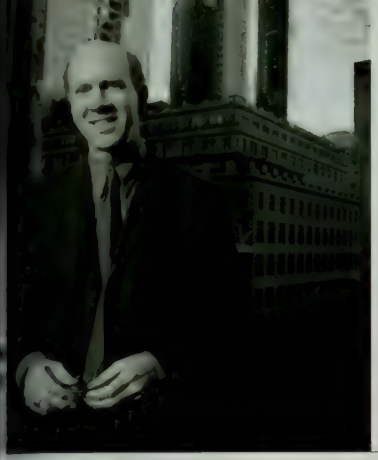


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Editorial

By Robert Ivy, FAIA

On campuses across the United States, fall brings homecomings, which tend toward beer-laced nostalgia amid the swirling autumnal leaves. Some of us will return to architecture schools, shudder as we pass through the design labs, puzzle over incomprehensible student work, clap old friends on the back, eat and drink to excess, then gratefully retreat to paying jobs.

One university's graduates have cause for another kind of celebration—an unanticipated one. On October 22, graduates of Tulane University's architecture program gathered for a ceremony celebrating the retroactive conferral of the Masters of Architecture degree. You heard that correctly: Throughout most of its long history, the Tulane School of Architecture offered the B.Arch. as the first professional degree. In May, with a wave of the academic wand, those degrees automatically converted to a master's.

In renaming its degree after the fact, Tulane (which now grants the M.Arch. and the Ph.D.) joins an extremely short list of other universities; 13 schools of architecture offer a 5-year M.Arch. program at present. While such a gift to its graduates might seem precipitate, there is precedent in legal education. Forty years ago, the American Bar Association recommended that the Juris Doctor (J.D.) replace the more ordinary LL.B.

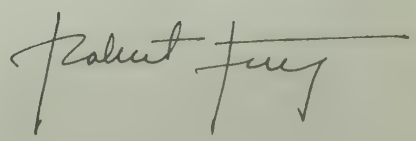
Certainly, the granting of degrees involves more than pleased alumni; larger benefits should accrue from the action, and the arguments for the M.Arch. are several. The first is clarity: For most people in the larger world, a bachelor's diploma signifies a 4-year undergraduate degree. Few outside of architecture's inner circle understand that the B.Arch. is designated as a "First Professional Degree," or that it stands for a 5-year education often accompanied by a thesis or other rigorous requirements.

Although the public admires architects and architecture, few understand what we do, much less care how we are schooled. Unfortunately, we've only compounded the confusion. For all of our vaunted love of order, we have created a cholesterol-clogged education system jammed with choices and resulting diplomas. Who can parse them out? Alternative programs, from the B.A. in Architecture to the 3-year accelerated master's to the 4+2 clutter our understanding. In such a polyglot environment, some consistency is called for; everyone understands the master's.

To the need for clarity, add degree inflation. We all know that the master's has become de rigueur for anyone with the hope of teaching on a university campus, including valued practitioners hoping to return to the classroom. Unfortunately, the perception of the B.Arch. has become devalued on campuses overrun with Ph.D.'s, ergo a strong impetus for change. There would be much homework to accomplish to ensure that the pedagogical system be equal to the designation.

No one suggests the master's as a panacea for fundamental problems surrounding architectural education. Our best minds, including the five collateral organizations with a stake in the efficacy of architectural education, have been debating the pros and cons for years. Some programs simply are not suited for the master's, and others will chafe at the notion. However, for those of us bobbing about in society at large, including the editor in chief of ARCHITECTURAL RECORD *(yours truly is one of those graduates who pursued an accelerated 3-year program following a liberal arts degree, resulting nonsensically in two bachelor's degrees), the M.Arch. offers a recognizable standard that elevates our position and allows us to hold our heads higher. This is a retroactive ceremony well worth a homecoming.*

The implications of Tulane's largesse remain unclear. But as Joanna Lombard stated in a paper for the ACSA in 1997, "If law schools are an example, then without a specific degree mandate from any of the five architecture organizations, individual schools will set the course." The time for consensus in architectural education has come, or outside forces may force us into unanticipated or unwelcome change.




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Letters

Lasting words

Thanks for your October editorial on Fay Jones [page 17]. He was a wonderful individual. He once told me, "Don't ask a material to do something it does not want to do—don't embarrass the material." I thought that was so appropriate. He thought of the whole building in the same manner, with its relationship to the natural world.

Eddie Cazayoux
Lafayette, La.

Compromising positions?

It is very distressing to see a professional trade magazine such as ARCHITECTURAL RECORD publish an overtly offensive back cover [September, 2004]! Several employees in my firm did not comprehend why the editorial staff would permit such an advertisement. I would hope that the allure of the advertising revenue generated by a cover would not cloud the editorial staff's judgment in what is appropriate for this publication. The suggestive and compromising position of the androgynous person in the "background" of the advertisement did not titillate any employees in my firm, either male or female. I am not sure what message is to be conveyed, but I trust in the future you will exercise better judgment. I think the premier professional periodical of the AIA deserves nothing less.

Donald D. Searle, AIA
Lancaster, Pa.

Into the void

I find it surprising that September's Record News story, "Ground Zero—Three Years Later" [page 46], never used the term *urban design* in the discussion of what has been happening downtown. This potpourri discussion about the sacred site perfectly mimics the design process. It is time that architects and citizens wake up and understand that the big architectural agglomerations of gesturing signature buildings do not constitute urban design. The art of urban design only minimally involves building form and is mostly about making the form of the void. If there is any possibility of making places of "hope" and "remembrance," it will be in the design of the voids, not the solids. I would argue that it is axiomatic that the more the solids are out gesturing and ignoring one another, rather than working to make space, the more difficult it is to make a significant, meaningful, and beautiful place.

Michael Schwarting
Director, New York Institute of Technology Graduate Program in Urban and Regional Design; Partner, Campani and Schwarting Architects
Port Jefferson, N.Y.

Heroic applause

Thank you for identifying Santiago Calatrava as one of the heroes of the 2004 Summer Olympics in your September editorial [page 19]. The media seemed to glorify the winners and put down the losers and cheaters of the Athens games. And everyone seemed to focus on the security issue and the fact that the construction timeline was buttoned up to the last button. Not mentioning Calatrava as a part of the Olympics is like not mentioning a stage designer for a play.

From these Olympic Games we are left not only with an image of the Parthenon, but also images of the arched Olympic Stadium, the Velodrome, the Cauldron, the elegant Agora, the Plaza of Nations, the Entrance Plazas, and the Olympic Fountain. Let's hope that the 2008 Summer Olympics will create similar images for us.

Andy Leja
Orland Park, Ill.

LEED-ing the way

I was surprised, as the finishing touches are put on our project at the University of South Carolina—which is going for a Gold LEED Certification and was designed with the help of BIM (Autodesk Revit)—to learn from Ken Sanders's article that "BIM isn't working yet" [Tech Commentary, September 2004, page 181].

On behalf of the firms and architects who are making hay while the masses sleep, a more accurate statement might be, "There exists a major technology gap in which those daring enough to adapt new technology into their services are providing value to their clients that is way beyond that provided by the masses."

It strikes me that the bigger story is that there is technology available right now that can, for instance, make sustainable design more manageable and "doable" by mainstream architects (by allowing solar access and day-lighting design within the design/documentation model) or can bring store merchandising design and fixture management together in ways never before possible (by allowing visualization and building content management together in the same program).

Sanders is correct that the value proposition would be greatly enhanced by a more integrated design-construct process in which more, or all, of the building's stakeholders are working together. The power of this idea has been proven by the holistic, sustainable design process, which can produce better buildings for the same cost. But, it is also true that if architects wait for "broad client demand for 3D building models," they will be left holding a very empty bag.

Jim Gleeson, AIA
Design Integration
Charlotte, N.C.

Corrections:

In the October Product Briefs, the description of the R-Steel wall panel system [page 236] should have listed the R-Steel Web site as www.r-steel.com. R-Steel is a BlueScope Steel Company. In the October Record News story "Will Number Crunching Fix Architecture's Diversity Crisis?" [page 40], the names of the following associations were inaccurate: They should be Association of Collegiate Schools of Architecture (ACSA), National Council of Architectural Registration Boards (NCARB), and National Architectural Accrediting Board (NAAB). In another October news item, "In Memoriam" [page 31], the caption for the second picture from the right was misidentified—the church in the photograph is Eero Saarinen's North Christian Church in Columbus, Indiana. Also in October's news, the story "Writers Serve as Muses for Architects' Projects in Princeton" [page 42] failed to list Ronald Berlin, AIA, as the architect of the project for Paul Krugman. Additionally, in a caption for the Krugman project, Gil Rampy, instead of Berlin, was listed as the architect. The architect name for Vista House in October's Residential section [page 219] was misspelled: The firm name is Simon Conder Associates. The introduction to that section [page 201] incorrectly noted that one home is situated on an island; in fact, House of Silence is a lakeside residence in southeastern Finland. September's perspective image of the Urban Design and Landscape Master Plan for the 2008 Beijing Olympics [page 27] should have been credited to Sasaki Associates. In the June archrecord2 story, "High Design Hits the Spot" [page 100], Rocio Romero should have been noted as the co-designer for Skid Row's Service Spot.

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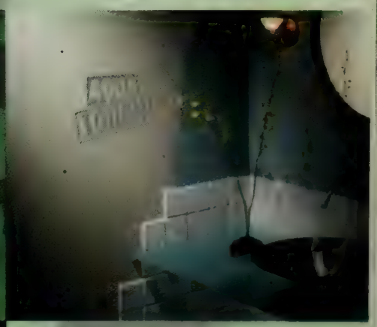
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ALCAN COMPOSITES

Record News

Highlights Major fall projects opening p. 28
High Line announces winners p. 30
Vietnam Vet Memorial Education Center p. 32
Inflatable monument for Paris p. 34

Gehry, Snøhetta to design cultural facilities at Ground Zero

Essentially completing its architecture-firm selections for the design of buildings at Ground Zero, the Lower Manhattan Development Corporation (LMDC) announced on October 12 the choice of Frank Gehry and Norwegian firm Snøhetta to create preliminary schemes for the performing arts and museum complexes at the World Trade Center site.

Gehry, recently chosen to design an office project in Manhattan and a stadium and mixed-use complex in Brooklyn, will add to his newfound New York presence with what is perhaps one of the most important commissions of his impressive career. His firm, Frank O. Gehry and Partners, will design the Signature Theater, for drama, and the Joyce Theater, for dance. The LMDC said in June that the Signature would house 499-seat and 299-seat theaters, and the Joyce would have a 900–1,000-seat theater, though the figures are still tentative.

Gehry could not be reached for comment, but he said in an emotional written statement that his first look at the site brought tears to his eyes. "In the end, having theater and dance and beauty is kind of a wonderful legacy for the memory of the people that were lost," he noted.

Unlike the choice of long-established designer Gehry, the selection of Snøhetta instantly catapults the rising firm into the architectural elite, at least by the standards of recognizability. Founded in 1989, the firm has designed the Alexandria Library in Egypt, the Norwegian Embassy in Berlin, and the soon-to-be-completed National Opera in Oslo, and is known for designs that mesh with their surrounding landscapes.

"It is almost too exciting," said Snøhetta partner Kjetil Thorsen of the commission, the firm's first in the U.S. It is for the Freedom Center, dedicated to the cause of human rights, with exhibition spaces, a theater, classrooms, and presentation areas. The firm will also design the Drawing Center, a visual arts and education facility that will include gallery space and locations for public programs.

Selection of the winning teams was made by the museums and cultural institutions themselves, the LMDC, the city's Department of Cultural Affairs, and the New York State Council on the Arts, among others. Teams short-listed for the projects comprised a who's who of architecture, including Rafael Viñoly Architects, OMA, Studio Daniel Libeskind, Pei Cobb Freed and Partners, Polshek Partnership, Ten Arquitectos, Tod Williams Billie Tsien Architects, and Moshe Safdie and Associates.

Libeskind was a notable omission in the choice of architects, given the strength of his proposals for the "Innovative Design Study for the World Trade Center Master Plan," which helped win him the role of site master planner but never led to a building commission at Ground Zero. He noted in a statement: "Naturally, I am disappointed not to be able to make an architectural contribution to the site, but as master planner, I am delighted that some of the world's best architects have been selected and look forward to working with them." *Sam Lubell*

Philip Johnson Retires at age 98





Johnson's Glass House in New Canaan, Connecticut (left), where he still lives.

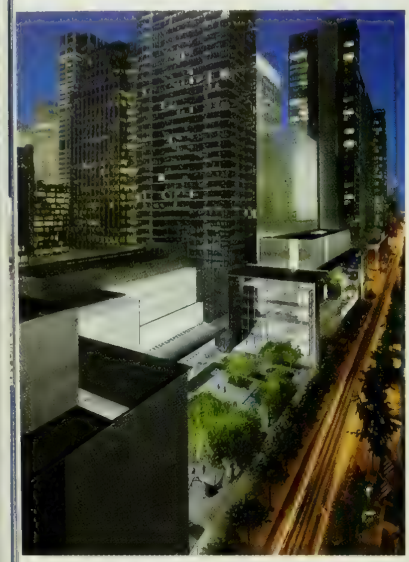
World-renowned architect Philip Johnson, FAIA, announced on October 7 that he is retiring at the age of 98, after more than 60 years in practice. Johnson, principal at Philip Johnson/Alan Ritchie Associates in New Canaan, Connecticut, is widely regarded as one of the pioneers and masters of Modernism. His prominent buildings include the highly influential Glass House, completed in 1949 in New Canaan, a clear box praised for its elegance and simplicity; the equally elegant (although much taller) Seagram Building, a late-1950s corporate tower built with Mies van der Rohe before such towers were the norm; the exquisitely complex Garden Grove Crystal Cathedral in California; and the Postmodern AT&T Building, with its controversial Chippendale top, in Manhattan.

Johnson's commitment to the simple forms of Modernism changed over time, and later in his career he experimented with sculptural designs. A recent project being developed by the firm for a children's museum in Guadalajara, Mexico, twists and contorts in ways that would have been unimaginable earlier.

The architect, born in Cleveland in 1906, was awarded the very first Pritzker Prize in 1979, and also won the American Institute of Architects Gold Medal in 1978. He studied under Marcel Breuer and Walter Gropius at Harvard, and was greatly influenced by Mies. He also served as director of the Department of Architecture at the Museum of Modern Art in New York City.

Johnson had been consulting for his firm from his home since last fall. The firm will keep his name and continue to operate under his partner of 10 years, Alan Ritchie, who told RECORD, "There's no question he will be missed. We'll miss the inspiration of knowing he's there, and we'll miss being able to seek his guidance. Hopefully, I can carry some of that on." Johnson could not be reached for comment. *S.L.*

Critical roundup: Fall is prime time for architecture

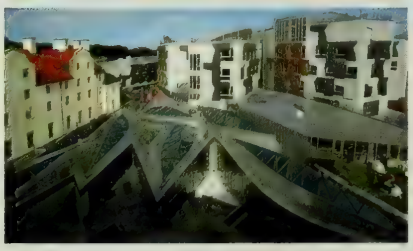


A rendering of Taniguchi's MoMA.

The most significant museum redesign in recent memory, an eccentric new parliament, a new home for jazz, a tribute to Bill Clinton above the Arkansas River: These are just a few of the significant projects opening in the next few months. Here is a preview, with some critical points of view.

MoMA, New York Japanese architect Yoshio Taniguchi's $425 million "rebuilding" of the Museum of Modern Art in Manhattan opens on November 20. The complex will house over 630,000 square feet of new facilities, including over 125,000 square feet of added gallery space. The architect creates what he describes as a "tensity" in the facade by using window glass etched with fine horizontal lines. Taniguchi wanted this tensity to unify the varied architecture of MoMA's expansions over the years. Inside, Taniguchi has created voids that extend upward through several floors to the sky; the intent is to draw light into lower levels of pedestrian space. These voids contort as they move upward, creating a canyonlike effect and significant architectural surprise. The museum also chose Taniguchi to provide more intimately scaled galleries without columns, and to incorporate intimate but airy spaces.

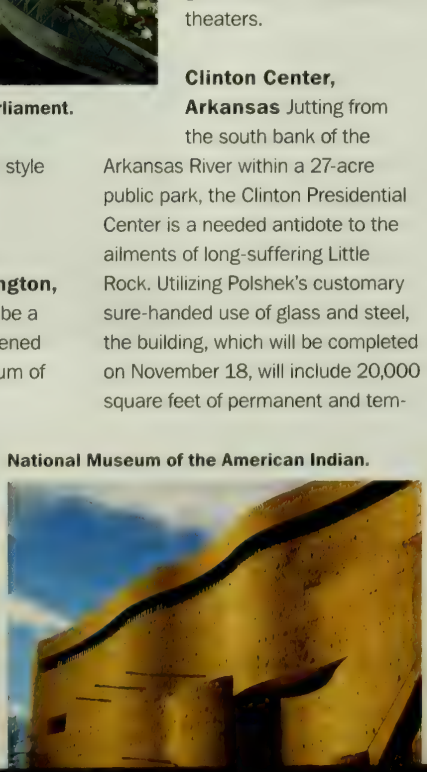
Scottish Parliament, Edinburgh The Queen of England opened one of the most extraordinary European buildings in years on October 9. The Scottish Parliament, in Edinburgh, is also Europe's most controversial new structure, having exceeded its very low early budget by a factor of 10 and taken years longer to build than anticipated. Its designer, Enric Miralles, of Barcelona, poured every ounce of his prodigious talent into this monument to devolution. Tragically, the architect died during construction, at age 45. While MPs will no doubt literally lose themselves in the building's dreamlike intricacies, Miralles's imagery evokes Scotland's history—its bloodiness and nobility—with Catalonian style and passion.



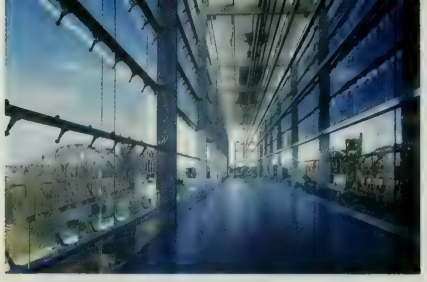
Enric Miralles's Scottish Parliament.

National Museum of the American Indian, Washington, D.C. Who knew there would be a structure like the recently opened $219 million National Museum of the American Indian on Washington's National Mall? The building resembles a mesa carved by the wind, its flexes and curves of honey-colored, rough-cut limestone rising from a Native American ecosystem. The original, and controversial, design showcases Indian history and culture from a Native perspective.

After winning the commission in 1993, architect Douglas Cardinal, a Cherokee and Choctaw, created a scheme reflecting themes voiced by native artists, elders, and chiefs from more than 150 Native communities. Cardinal was dismissed over a legal dispute in 1998, and a team of architects of native descent that included John Paul Jones, Ramona Sakiestewa, and Donna House later stepped in (Polshek Partnership oversaw the operation). But "by then the design was set," says director W. Richard West. In keeping with many Native traditions, the five-story, 250,000-square-foot building faces east toward the rising sun. An entrance with a sweeping overhang opens to a 120-foot-wide rotunda, which, soaring 120 feet to a skylight, opens to curving galleries and two circular theaters.



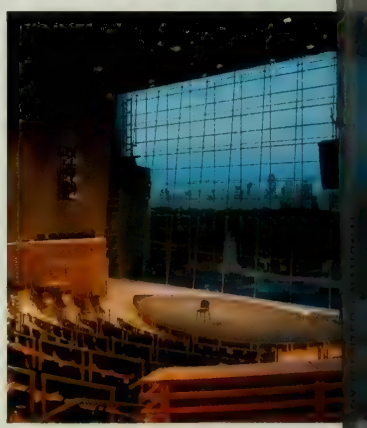
National Museum of the American Indian.



William J. Clinton Presidential Center.

Clinton Center, Arkansas Jutting from the south bank of the Arkansas River within a 27-acre public park, the Clinton Presidential Center is a needed antidote to the ailments of long-suffering Little Rock. Utilizing Polshek's customary sure-handed use of glass and steel, the building, which will be completed on November 18, will include 20,000 square feet of permanent and temporary exhibition space and 150,000 total square feet of new construction, including a theater, banquet hall, classrooms, and extensive archives. The design of the main building echos the old railroad bridges lining the banks of the river, and also delivers a visual splash with its strong linear focus, its floor-to-ceiling windows, and its layering of glass, steel, aluminum, and stone.

Jazz at Lincoln Center, New York Wynton Marsalis's dream to build the first performing arts facility dedicated specifically to jazz has been realized with help from Rafael Viñoly Architects. Located in New York's Time Warner Center, the complex, which opened in mid-October, contains an intricate combination of spaces for performance, recording, education, and in the case of Dizzy's Club Coca-Cola, drinking.



Jazz at Lincoln Center's Allen Room.

The facility is dominated by the 1,200-seat Rose Theater, whose seating bowl surrounds performers and is quite intimate for such a capacious space. But the highlights are the spots with the views: the Allen Room, an elegant, flexible performance space overlooking Central Park, with a 90-foot-high glass wall; and the aforementioned Dizzy's, an intimate, 140-seat jazz club that affords visiting musicians the best seat in the house—in their waiting room. *S.L., James Murdock, James S. Russell, Andrea O. Dean*

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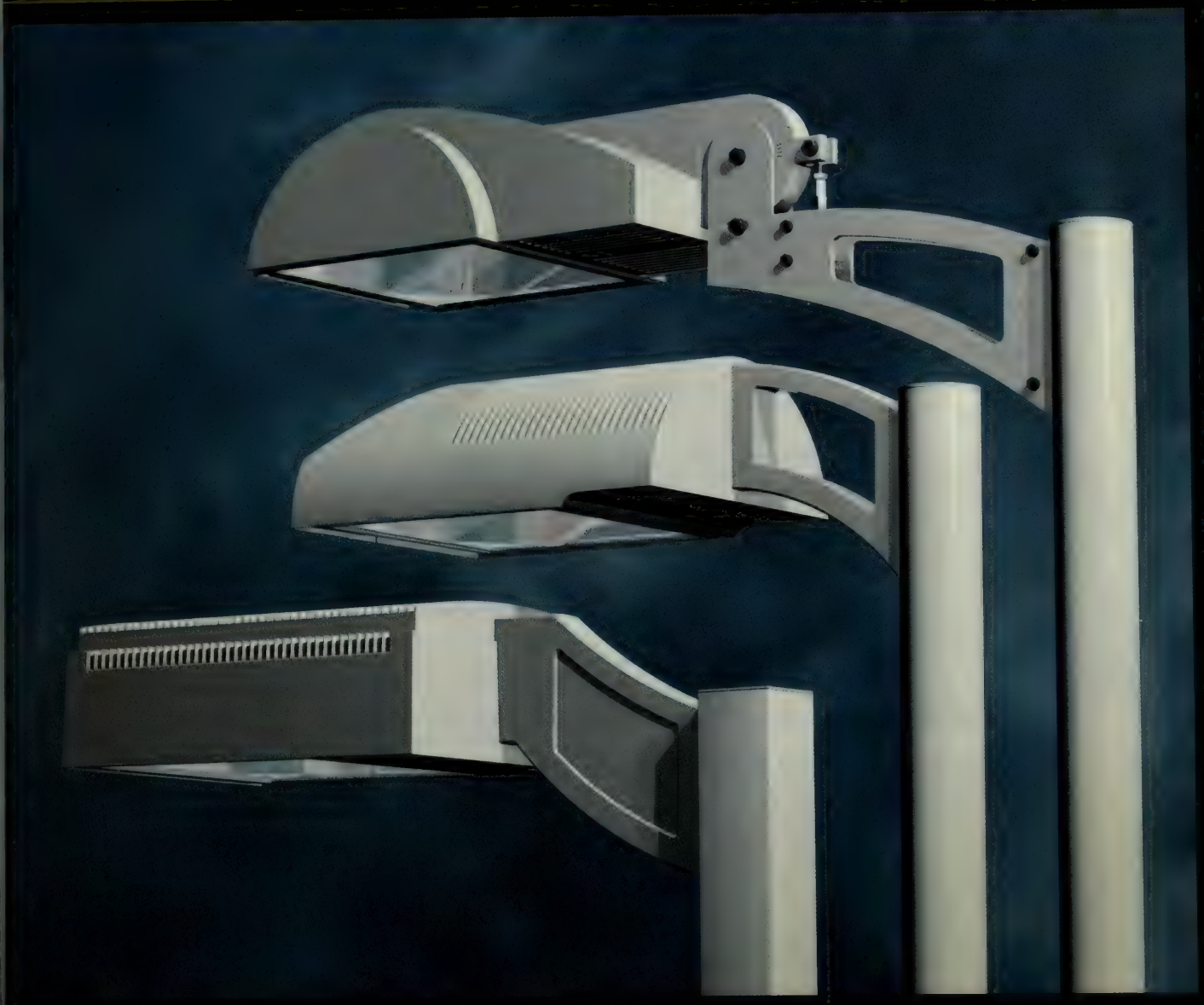
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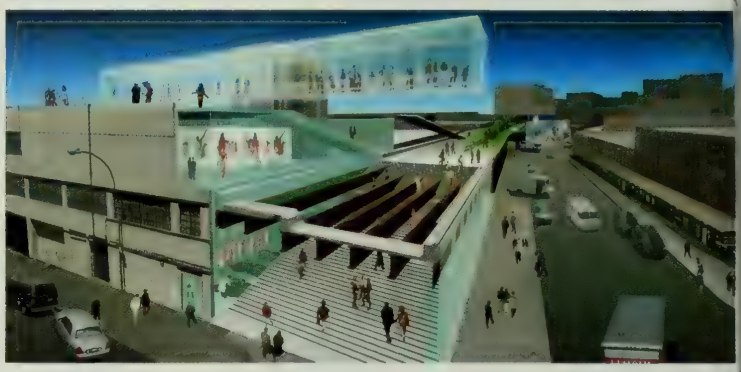
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High Line announces winners to design completely new urban space





The High Line will offer varied vistas of the city from a steel structure seeded with grasses and wild flowers (above). It will include performance spaces (below).

The radical undertaking to transform Manhattan's High Line—1.5 miles of abandoned freight tracks in New York City's Meatpacking District—is now in full swing. On October 6, at a high-profile press conference staged on the High Line itself, Mayor Michael Bloomberg and the Friends of the High Line (FHL)—the nonprofiting boosters who have spearheaded the project—announced the city's commitment of more than $43 million and named the official selection of a design team to reinvent the space: designer/landscaper Field Operations, with architects Diller Scofidio + Renfro, horticulturist Piet Oudolf, artist Olafur Eliasson, lighting designer L'Observatoire, and others.

These designers beat out an A-list of competitors—including Zaha Hadid, Steven Holl, and Michael Van Valkenburgh Associates—for the opportunity to envision an unprecedented type of urban space. Though the team selection was leaked in August, contractual negotiations delayed the official announcement for nearly two months.

The team's winning ideas for the project, which are by no means final, consist of "retooling" the industrial location into what they call a "postindustrial instrument of leisure, life, and growth." This would be achieved by way of "Agri-tecture," a smooth and flowing juxtaposition of man-made and organic materials and surfaces. The team's High Line promenades would include diverse flora and grasslands, bridges, hills, gardens, performance spaces, enclosed rooms, a swimming pool, and lush pathways featuring varied themes and surfaces.

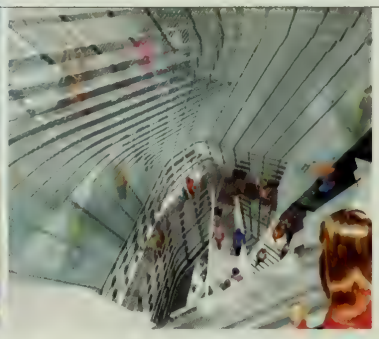
Pedestrians would access the High Line via a number of substantial staircases and elevators at major intersections below.

Lead designer James Corner paints a visionary but now-tangible picture of the High Line's near future as "one of the world's most spectacular urban spaces." He counts among his team's challenges the responsibility to preserve the High Line's unique poetic qualities: "its strange melancholy, its leftoverness, its scale, its magic and charm as a wild postindustrial vestige in the middle of the city."

Standing on the High Line, on a green carpet of long-growing weeds, Mayor Bloomberg touted the project's benefits: increased tax revenues and much-needed open space on Manhattan's West Side. He added: "We don't have an elevated park in this city. We should have one of everything. That's a good place to start."

Following community input sessions, the design team will lead FHL and the city in creating a master plan. The optimistic date for ground breaking is November 2005. *Ilan Kayatasky*





The new facility features fresh designs that include a glass envelope (far left) and a contorting glass atrium (left).

Mayne's design for Cooper Union doesn't fit into the box, but it fits into the East Village

The Cooper Union for the Advancement of Science and Art in New York City's East Village recently unveiled schematic designs for its new academic building. Thom Mayne of Morphosis is creating the nine-story building, which will house the school of engineering and the department of humanities and social sciences.

The building will have a glass envelope surrounded by a metal screen that will be operable by studio occupants inside. An atrium crisscrossed by glowing staircases will form the core of the building, both physically and conceptually, and will also be visible through the outer envelope. The building's elevators will stop only on every other floor, so students and faculty will be forced to take the stairs in the atrium and interact with each other. "The students and faculty become the facade," Mayne says.

An exhibition at Cooper Union that closed on October 23 illustrated some of Mayne's initial design concepts, and showed that the architect struggled with the building's preset envelope. "I was trying to warp the shape," says Mayne. Ultimately, zoning requirements kept him from twisting the upper floors of the structure or hanging projections over the sidewalk. "Since the envelope existed," Mayne said, "the design became entirely subtractive."

Mayne, who described the process of presenting his design to architecture faculty and students as being "like having your brain examined," will work on it until construction begins in 2006. When the building is complete, the school plans to demolish its existing engineering school and redevelop that site as well. *Kevin Lerner*

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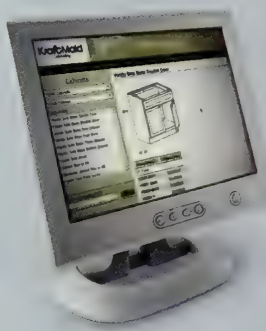
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Polshek chosen for Vietnam Veterans Memorial addition

New York–based Polshek Partnership was chosen in early September to design the Vietnam Veterans Memorial Education Center on the National Mall in Washington, D.C. The roughly 25,000-square-foot building, says principal James Polshek, FAIA, will likely be underground, dug into an elevated area near Maya Lin's Minimalist Vietnam Veterans Memorial so as not to interfere visually with that monument.

"We're not interested in making a statement here," says Polshek, whose firm was given the commission by the Vietnam Veterans Memorial Fund. "I see the architect's role as a facilitator: to facilitate learning, and to facilitate the ease of people moving in and out." The structure's purpose, adds Polshek, is "to keep alive for future generations all the issues raised by the Vietnam War," and to help "bring the names on the memorial to life."

Ralph Applebaum and Associates will design the center's exhibits, which will cover about 10,000 square feet. Other members of the Polshek team will include Hargreaves Associates, for landscape design, and engineers Robert Silman Associates and Vanderwell Engineers. Other teams short-listed for the project included Ann Beha Architects, ARO, and Michael Graves & Associates.

Jan E. Scruggs, president of the Vietnam Veterans Memorial Fund, explains that Polshek "understood the enormity and the trickiness of the challenge" on a site that will be intensely scrutinized. Another determining factor, he adds, was the strength of Polshek's recent projects in Washington, including work on the just-completed National Museum of the American Indian and the upcoming Newseum.



The center will sit adjacent to the memorial, seen here from above.

The fund, Scruggs says, hopes to raise $40 million for construction within three years, and to complete the building in either 2008 or 2009. *S.L.*

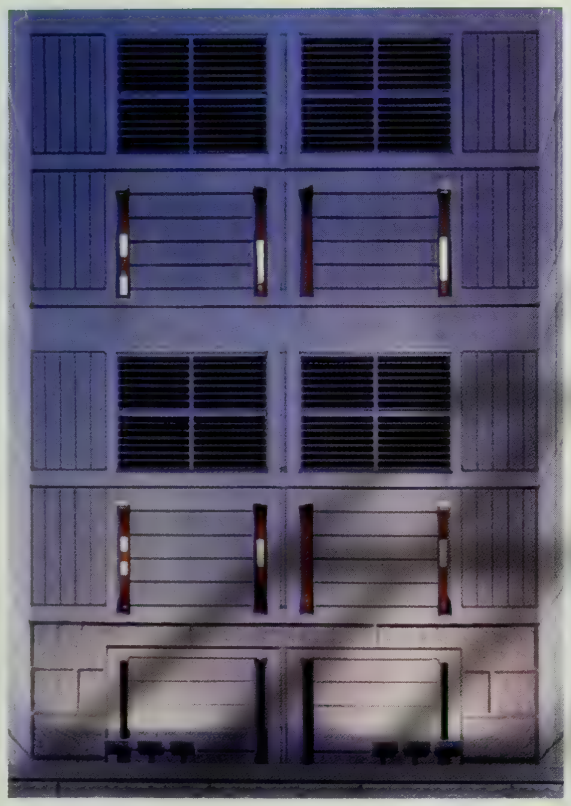
AIA Firm of the Year Lake/Flato making changes

A few months after winning the 2004 AIA Honor Award for Firm of the Year, San Antonio, Texas–based Lake/Flato Architects is reorganizing. With a total of eight partners, an unusually large number for a 40-person firm, Lake/Flato has spent the past 20 years "thinking about the work, not about the firm," according to partner David Lake, FAIA, who notes that winning the award gave the partners a chance to do a little soul-searching.

"Now we've won this award," says Lake, "so where do we go from here?"

John Grable, AIA, who has been a partner with Lake/Flato for 17 years, is starting his own firm, John Grable Architect, in San Antonio. The solo practice will focus on smaller-scale commercial and residential work. Another long-term veteran of the firm, Andrew Herdeg, AIA, will become a full partner, while Robert Trinidad, Bill Aylor, and Brian Korte will be promoted to associates. While Lake says the firm is in the process of putting its revamped mission together, he notes it will continue to focus on environmentally sensitive projects, including institutional work, buildings in the landscape, ecotourism, and single and multifamily residences. "What's happening at Lake/Flato is just a natural evolution," he says. ***Ingrid Whitehead***

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Record News

Paris selects unusual tower as possible Olympic landmark

On September 27, Paris 2012, the promoters of Paris as the venue for the 2012 Olympics, announced the winning design in its Olympic Landmark Architecture Competition. French firm Explorations Architecture's design for an inflatable construction was selected by a 19-member jury, which included Shigeru Ban, Peter Cook, and Jean Nouvel. The winners share a top prize of $12,400.



Inflatable rings as Olympic tribute.

The winning design consists of 17 inflatable rings made of synthetic material. Appearing to lift off into the air, the top five rings show off the Olympic colors. Explorations Architecture's two principal architects, Benoît Le Thierry d'Ennequin and Yves Pagés, designed what they call "a temporary and clearly visible playful monument, which fits into our work into light structures and the interaction between architecture and nature." A visitors' platform at 128 feet will afford panoramic views over Paris. The team still needs to work out the structural engineering that will allow the tower to move in the wind.

Early next year, the Olympic Landmark will stand temporarily in Les Batignolles, the site chosen for the Olympic Village should the capital be selected to host the games in 2012.

Other recent projects by the Le Thierry d'Ennequin and Pagés include a shell-like stage for the 2004 International Piano Festival in La Roque d'Antheron, and the soon-to-be-completed air-traffic control tower at Charles de Gaulle Airport. The provisional budget for the Olympic Landmark is $1.12 million.

The Pavilion de l'Arsenal, the competition organizer, however, is being criticized by 45 firms that claim that technical difficulties prevented them from e-mailing their entries in time to beat the September 6 deadline. In a written response to the architects who are contesting the rejection of their design proposals, Paris 2012 replied simply: "No technical or operating problems occurred during the reception of the proposals." *Robert Such*

Libeskind and Silverstein reach "genius fee" settlement

On October 7, World Trade Center developer Larry Silverstein and Ground Zero master planner Daniel Libeskind announced that they had reached a settlement regarding design fees for the 1,776-foot World Trade Center Freedom Tower.

Silverstein noted in a statement released to the press that he will pay Studio Daniel Libeskind $370,000 for its work on the project. Libeskind's firm conceived the building's height and off-center-spire scheme and, until December 2003, contributed to the design, which has been led by Skidmore, Owings, & Merrill (chosen by Silverstein). On July 13 of this year, Libeskind sued Silverstein for $843,750, an amount based on a percentage of the Freedom Tower's total cost. The amount, noted Libeskind's lawyer Edward Hayes, was based on a procedure rooted in industry practice.

"I am pleased that we have put these issues behind us so that we can move forward without distraction on the critical tasks ahead," said Libeskind in the statement. The architect is still in charge of the World Trade Center Master Plan for the Port Authority of New York and New Jersey and the Lower Manhattan Development Corporation. Silverstein noted similarly that he was "pleased that the mediation has produced a resolution to the dispute."

While noting that they were happy the process was over, neither Libeskind nor Silverstein would comment further on the settlement, or on whether they were happy with its result. However, Simeon Baum, president of New York–based Resolve Mediation Services, which mediated the dispute, told RECORD, "It was a resolution they were mutually satisfied with." *S.L.*

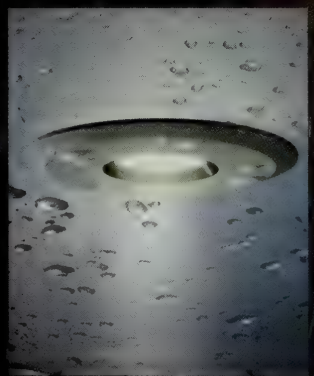
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Record News

Art show at Saarinen's terminal abruptly closed

One of the most highly anticipated and provocative artist exhibitions of the New York fall season ended abruptly after the raucous opening party got out of hand.

Eero Saarinen's TWA Terminal at New York's JFK Airport, closed since 2001, was in early October transformed into an exhibition hall for artists participating in a show called *Terminal 5*. Organized by independent curator Rachel K. Ward, the show was intended to reflect on the "transitory nature of travel, architecture, and contemporary art," according to Ward's exhibition statement. Ward, a freelance curator of contemporary art based in New York, first conceived the exhibition in the summer of 2003.

The show opened to a party on October 1 and was planned to continue through January 31, with a variety of public events and lectures. But the opening night crowd of artists and hundreds of other revelers, which was much larger than anticipated, left a mess, including vomit on the floor, broken glass, graffiti on walls, and a broken door, according to the Port Authority of New York and New Jersey, which operates the airport. The Port Authority claims liquor was being sold without a permit, but Ward says she did not witness that. She prompted people to leave and closed the party one hour early only because "the crowd had reached a great number," she says.





Installation by Aleksandra Mir in the VIP lounge (above). Artists visit the site prior to the show (top).

Ward would not confirm the damage specifics, and although she says the terminal was adequately cleaned in the following days, the Port Authority pulled the permit and did not allow the exhibition to open to the public as scheduled on October 5. At press time, Ward was in negotiations with the Port Authority to reopen the show. The terminal and exhibition had also been a planned highlight of the second annual openhousenewyork weekend, October 9 and 10.

"We responded to the size of the crowd by ending the event early, and we responded to the aftermath," Ward told RECORD. "I began the project out of dedication to the landmark," Ward says. "I was heartbroken that this building was closed to the public."

Among the nearly 20 artists in the *Terminal 5* show, Tobias Wong designed a new gift shop, Jenny Holzer developed text messages for the terminal's arrivals and departures boards, and Douglas Coupland designed imaginary machines with shapes derived from aircraft equipment. Ryoji Ikeda, a Japanese sound artist, developed a light-and-sound installation in one walkway, and Tom Sachs constructed a skateboard ramp in another. *John E. Czarnecki, Assoc. AIA*

Another ballot: Vote for your favorite Times Square building

Thought Times Square was all about chain stores and porn shops? Think again. The Times Square Alliance, a Business Improvement District that works to promote the ever-changing area, has organized "Design Times Square," which allows people to vote online for their favorite neighborhood building. Unbeknownst to many, there are quite a few gems.

Some of the 39 candidate buildings include the historic Shubert Theater, the Beaux-Arts New York Times Building, and the flamboyant new Westin Hotel by Miami's Arquitectonica.

"We want to get people to recognize that Times Square has legitimate art and architecture, not just slapped-together kitsch," says David Billotti, a spokesman for the project.

Jurors, who narrowed the list from 150 buildings, included Hugh Hardy of H3 Hardy Collaborative, and Raymond Gastil, executive director of the Van Alen Institute. Those interested in voting should visit www.timessquarenyc.org. They will be eligible to win hotel stays, restaurant visits, and theater tickets in the area. Voting ends on December 1. *S.L.*



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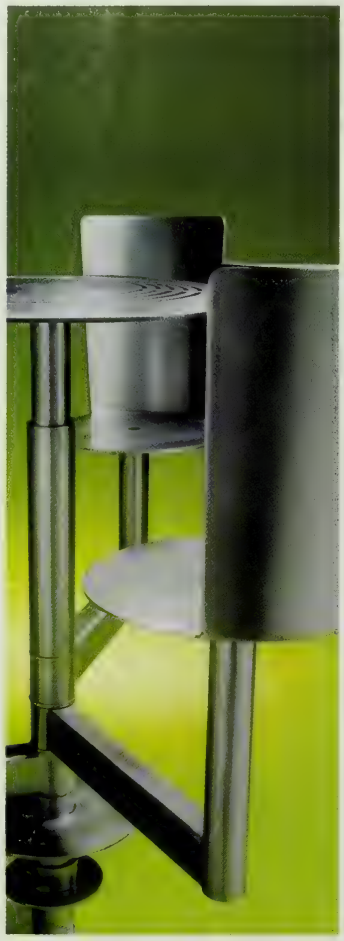
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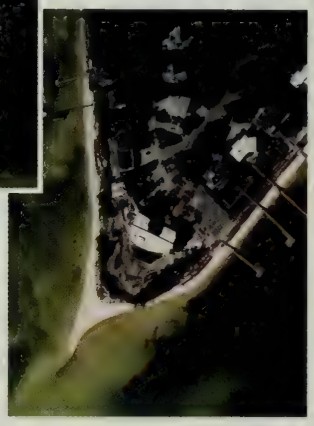
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Mullet's house before (left) and after (below left) Ivan. It suffered only minor damage. The overhead view (below) shows the house's proximity to the water.

Those in glass houses can handle stones: A Modern residence survives Ivan's havoc

Pensacola, Florida, and the adjacent town of Gulf Breeze were likely the hardest-hit locales of all in Florida's record-breaking hurricane season. In mid-September, Hurricane Ivan flattened the area with wave heights reaching over 15 feet and winds gusting well above 100 miles per hour, knocking bridges over like Legos, and bringing down hundreds of homes and schools. The U.S. Department of Transportation reports that the storm also ripped the roof off the local airport, and caused major sections of the local interstate to collapse.

But despite such heavy losses, one of the most notable structures left standing wasn't a concrete bunker, nor was it one of the hundreds of Spanish-tile Mediterranean knockoff houses that seem to be a prerequisite in the area. It was a Modern glass house in Gulf Breeze by Krueck & Sexton Architects of Chicago.

The home, which was about four weeks from being finished at the time of the storm, contains about 850 pieces of long, rectangular glass in its main body. Only two broke during the storm.

"Contemporary architecture often gets blasted for being inappropriate and whimsical," says Mark Sexton, a firm principal, who cites a 1998 article in *Wired Magazine* mocking his plans to build the house as a "futuristic folly." He notes: "The proof is in the pudding. This shows that when it's designed correctly, it can be stronger than most buildings."

The house's safety features include 11 steel "sprouts," bolted into pile caps under the house, which held it in place and deflected floating and flying debris. Meanwhile, Sexton says glass has an advantage in such situations, because it is more flexible than most building materials. The glass is not laminated, but is tempered closer to the floors. The site is on a bay in front of the Gulf of Mexico, and many of the surrounding houses are now uninhabitable. Others are missing roofs and walls.

"It's amazing that it stood," says Sexton, who is alternately proud and amazed at its performance. The bottom 12 feet of the house (essentially support structure) was designed to rip away during a hurricane, because of government regulations. But the rest is in good shape despite some dents, scratches, water damage to the floor, and appliances that don't seem to work. The owner, Willis Mullet, stayed in the house during the storm (a practice strongly discouraged by authorities) to ensure its well-being, and professes an almost eery faith in the building. "Obviously, there's nothing for certain, but I watched it go up, and I knew it was constructed very well, so I felt confident," he says. Mullet and his wife and four children have since moved into the house, a welcome break considering that in the wake of the storm, local rental homes are all booked and even motel rooms are close to impossible to find. *S.L.*



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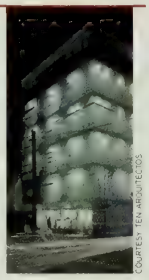
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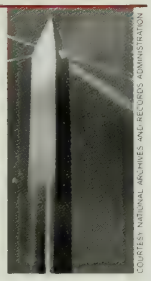
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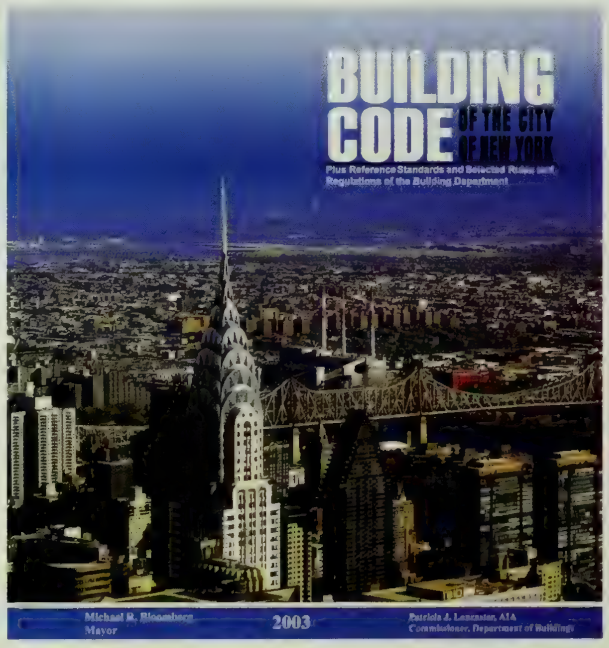
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New York planning overdue overhaul of its building code

Spurred by the tragedy of 9/11, New York City is planning the first major overhaul to its building code (cover, below) in over 35 years. In October, the city introduced legislation to revise its infamously Byzantine code by January 2006 and make it compatible with the International Building Code (IBC) already in use in 44 states. The changes being developed under New York City's Model Code Program are expected to improve building safety, allow the use of new technologies, and simplify the city's building regulations.



Currently, the city's building code text is not regularly updated (for instance, it took about 10 years before the code was last updated in 2003), and to build in New York, a developer or an architect needs to have knowledge of local building laws and amendments enacted since the previous update. In contrast, the IBC is regarded as simpler to use, and the entire IBC text is republished every three years, with revisions by the International Code Council. Meanwhile, the existing code requires getting special permits for many new construction materials and technologies already in use in other parts of the world, such as photovoltaics, while according to several building experts now reviewing the codes, the IBC is well known for its embrace of modern technologies.

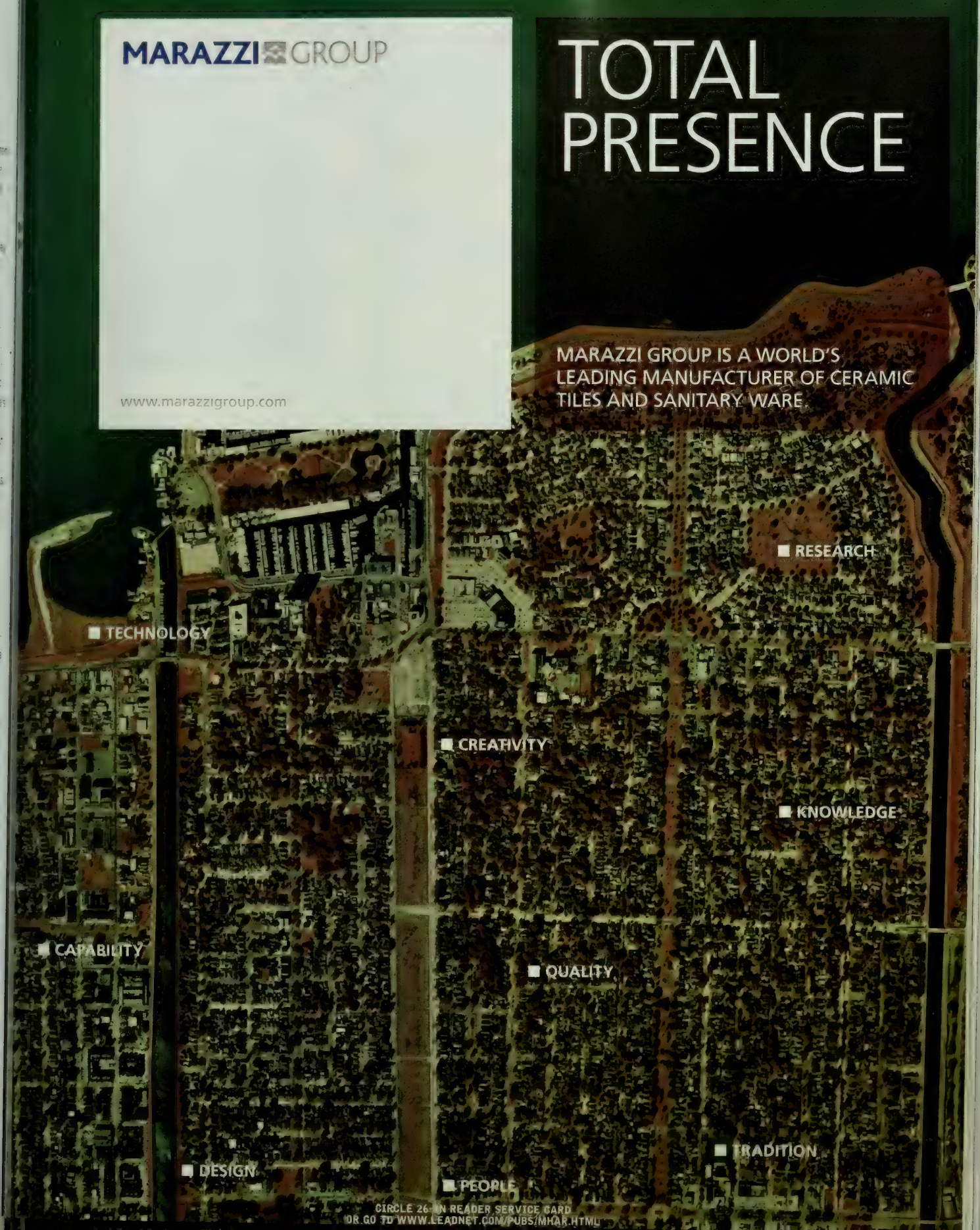
City officials emphasize that substantial modifications will be made to the IBC to address New York's unique and highly dense built environment. Another consideration is how to balance the need for new safety features with potential increases in development costs.

Still, some safety aspects of the IBC are extremely controversial, such as what some say is too much emphasis on sprinkler systems at the expense of fire-resistant construction. "An unfortunate problem with the IBC is that there has been a wholesale shift downward in terms of hours of fire-resistance," says Glenn Corbett, assistant professor of fire science at John Jay College and a member of the Model Code's fire-safety committee, who supports adopting the IBC but with much stricter fire-resistant-construction requirements. Says Corbett, "One of the biggest lessons to come out of 9/11 is that structural fire-resistant construction plays a key role."

Meanwhile, many in the real estate industry are worried that incorporating safety requirements from the city's code into a modified version of the IBC will increase development costs. "If you end up taking the most stringent provisions of the city's code, and then take the IBC wherever it is more stringent, then you are by definition coming up with a more costly code," says Marolyn Davenport, senior vice president of the Real Estate Board of New York and member of the Model Code's managing committee, which is overseeing the proposed code changes.

But others involved with developing the new regulations say that it is possible to contain the costs of increasing security by making strategic decisions about which safety provisions to choose from the two codes. Stanley Dawe, chair of the Model Code's fire protection committee and former New York City chief of fire protection, acknowledges that some fire measures may cost more, but adds, "There will be trade-offs that will balance the costs out." They better, notes Jennifer Givner, press secretary for the New York City Department of Buildings. "It has to cost the same, if not less; if it costs more, we are going to have to go back to the drawing board." *Alex Ulam*

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Record News

Officials discuss new uses for Boston churches

Citing monetary issues, demographic shifts, and maintenance costs, the Roman Catholic Archdiocese of Boston is in the process of closing more than 80 of its 357 parishes. Amid the sometimes litigious and rancorous shutdowns, preservationists, community groups, and planning officials are scrambling to advance appropriate uses for the parish holdings. The archdiocese encompasses 144 towns in eastern Massachusetts. In addition to church buildings, many parishes also own rectories, convents, schools, and parish halls.

At this fall's 2004 Statewide Historic Preservation Conference in Salem, Massachusetts, the Boston Preservation Alliance and Preservation Massachusetts staged a charrette on the reuse and conservation of archdiocese buildings. Preservationists, planners, architects, and others hashed out a range of reuse options for parishes. The organizers will circulate a summary of the charrette as a resource for groups looking to preserve religious properties.

The designers considered as a case study Blessed Sacrament in Boston's Jamaica Plain neighborhood, which closed on August 31. The massive Renaissance Revival church, which has an octagonal tower, was completed in 1917. According to the panel, selling it to another religious group for use as a house of worship would be considered the "highest and best use," maintaining the building's function and requiring the least conversion.



Boston's Blessed Sacrament: a future condo?

But the most likely use, it appears, would be for residential condominiums. Stained-glass windows, reliquaries, and other objects would be removed if the church were to be deconsecrated. This would carve up the interior but generally preserve the envelope and significant architectural details.

Saving all existing parish structures would be difficult, say charette participants, but the most significant could be preserved if others were sacrificed for high-return development. Officials and concerned citizens stressed the need for community input and a coordinated approach. If there are willing buyers, reuse of churches and their auxiliary buildings as places of worship, housing, even for commercial mixed-use and schools, is the best preservation scenario and can often fetch better than fair market prices. *Ted Bowen*

Beijing Architecture Biennial reveals ups and downs

The first annual Beijing Architecture Biennial was held from September 20 to October 2 at various venues in the Chinese capital. The event focused on current architecture in China, casting a positive lens on the many innovative projects under way in the country.

The centerpiece was a large-scale exhibition featuring works by architects from China and overseas at the National Art Museum in downtown Beijing. Architects currently working in China were invited to submit renderings, models, and explanations of their China projects. Participants included Rem Koolhaas/OMA, Steven Holl, Herzog & de Meuron, Paul Andreu, Foster and Partners, and Zaha Hadid. In addition, the work of up-and-coming Chinese architects, such as Bu Zhengwei and Chai Peiyi, was featured. Exhibitions of student work and young Chinese architects were also held at Tsinghua University.

A series of eight sparsely attended panel discussions were also held; topics mostly dealt with the state of contemporary architecture in China, the growing interaction between local firms and designers overseas, and China's almost obsessive willingness to award high-profile projects of national importance to foreign architects. Tensions have risen recently about the apparent lack of cultural deference in many of the country's signature architectural projects, which are usually designed overseas. The biennial, which was plagued by organizational problems, such as ticket-sale mishaps, a lack of attendance, and arguments with participating architects, was sponsored by China's Ministries of Culture and Construction. The ministries plan to hold future biennials. ***Daniel Elsea***


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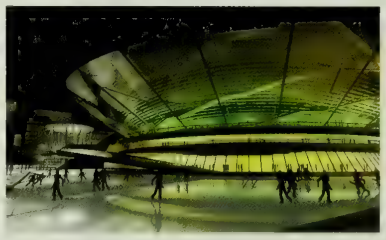
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Team announced to design new Kansas City arena

In a flurry of activity, a nine-member selection committee announced on September 30 that the alliance called the Downtown Arena Design Team (DADT), comprising HOK Sport, Ellerbe Becket, 360 Architects, and Rafael Architects, would be the designers of a new Kansas City sports arena. The local team was selected over a group featuring Frank Gehry and Crawford Architects.



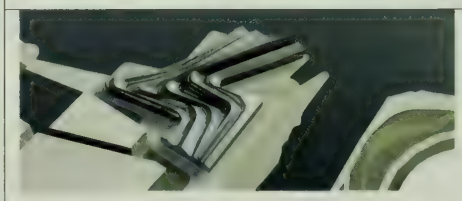
Although schematics have not been approved, a rapid project timeline envisioning a March 2007 completion suggests that whatever is built will likely be close to the team's conceptual scheme. According to that outline, the building will address its context on all four sides and rise like a glass bowl over a canted glazed base revealing an internal communication system of cantilevered ramps as well as the seating structure. A LED readout around the cornice will project advertising and images of activities going on inside. At ground level, a reflecting pool will become an ice rink in the winter. The $250 million, 750,000-square-foot arena will seat up to 19,000. Anschutz Entertainment Group (AEG) of Los Angeles, which will operate the arena, has reportedly promised to seek an NHL or NBA franchise as principal tenant. *Robert Benson*

Beloved hotel to be replaced with school?



A plan to raze much of Los Angeles's historic Ambassador Hotel for new schools is ruffling the feathers of preservation advocates. In mid-October, the Los Angeles Unified School District Board approved a $318.2 million plan to convert the 18-acre site into a 4,200-student school complex to serve a densely populated neighborhood.

Most controversial is the proposed demolition of the six-story, 83-year-old main building, designed by Myron Hunt. A conceptual design by Pasadena-based Gonzalez Goodale Architects recreates the facade as part of a new school building (rendering, right). Many community groups back demolition, arguing against the use of bond funds for preservation. But to the Los Angeles Conservancy, demolition would destroy "one of the great landmarks of Hollywood," says Ken Bernstein, the group's director of preservation issues, who adds that historic local hotels have been converted into schools before. But Glenn Gritzner, an assistant to superintendent Roy Romer, contends that conversion would be prohibitively expensive. A 2006 construction start is planned, and the complex is slated for completion in 2009. At press time, the conservancy had not decided on a court challenge. *Paul Rosta*



Glasgow hopes Hadid can help remake its waterfront

Zaha Hadid has scooped her second architectural project in Scotland, Glasgow's $90 million Riverside Museum of Transport on the banks of the River Clyde. She beat out more than 40 rivals.

The new museum is intended to stand as a monument to 21st-century Glasgow and will be sited at the point where the River Clyde meets the River Kelvin, adjacent to a major urban redevelopment, the Glasgow Harbor site. In 2002, Glasgow City Council unveiled a City Plan for regenerating and transforming the area, called Clydeside, from a postindustrial wasteland into a vibrant corridor. Next door, the Harbor scheme, master planned by Kohn Pedersen Fox, is a $900 million waterfront development of 650 new homes, offices, shops, and leisure facilities on 120 acres of former dockland. Hadid called her design "a postcard view" at the moment, but the swerving shape of its futuristic model is clearly all about movement. She plans to begin construction in 2007, with the intention of opening the new museum by 2009. *Lucy Bullivant*

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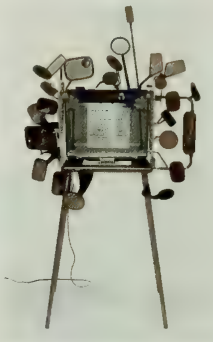
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News Briefs

A vote for better design Just in time for the election, architects, artists, and designers have reformulated the Votomatic voting machine, the infamous, 1960s-era apparatus that Florida voters used four years ago. Their work is on display through November 15 in *The Voting Booth Project*, an exhibition at the Parsons School of Design in New York. Paul Goldberger, dean of Parsons's architecture school, was inspired to stage the show earlier this year when he was given roughly 50 vintage booths—still filled with chads. "By actually having the artifact from that election, people were able to comment on the design issues," says Chee Pearlman, who curated the show. "You had something that was flimsy, outmoded, and confusing to use. People saw in that fragility the fragility of the democratic process." David Rockwell's entry, entitled *Playing With Fire*, is a voting machine constructed entirely out of matches. "A single spark and this would go up in smoke," Pearlman observes. *James Murdock*

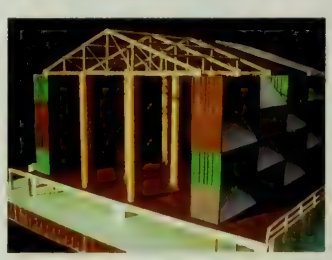


Robert A.M. Stern's booth, *Hindsight 20/20*.

Otto wins RIBA Gold Medal Frei Otto, 79, the German architect and engineer, has won the latest RIBA Gold Medal, it was announced in early October. Otto's pioneering tensile structures, grid shells, and stretched membranes have been widely influential, and he is responsible for the revival of the tent as a feature of modern architecture. His most famous projects include the West German Pavilion at the Montreal Exposition in 1967 and the roofs over several sports structures at the 1972 Olympic Park in Munich. *L.B.*

Meier in Vegas Architect Richard Meier, FAIA, is designing a new, $1 billion, 1,500-unit hotel-condo complex at the Hard Rock Hotel and Casino in Las Vegas. Consisting of four buildings, totaling 1.5 million square feet, the project calls for studio apartments, one- and two-bedroom units, and 6,000-square-foot penthouses. Plans also include poolside bungalows and villas, plus upscale restaurants, nightclubs, retail shops, and a health club and spa. *T.I.*

A traveling museum In late September, Japanese architect Shigeru Ban shared plans for a temporary museum on a historic West Side pier in New York City. The Nomadic Museum, opening in spring 2005, is designed to be easily transportable. It will display the photographic works of Gregory Colbert, whose show, *Ashes and Snow*, features large-scale photography and film projections on the subject of nature and man. The first museum of its kind, the Nomadic Museum's perimeter will be composed of 148 steel cargo containers constructed in a checkerboard pattern. Waterproof paper tubes will create roof and trusses. The museum's content will be able to be broken down and shipped in 37 cargo containers, while the remaining containers will be borrowed at the museum's future locations. *Randi Greenberg*



A model of Ban's traveling museum.

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News Briefs

Wal-Mart becomes art New York–based conceptual artist Russell Maltz has for years been altering built forms with shape and color. In February, he began bringing the technique to the Concrete Masonry Units (CMU) installed at chain stores like Home Depot and Wal-Mart, painting them Day-Glo yellow to attract attention "in an environment that is always trying to grab you." He started placing the works outside of stores this spring in Connecticut, New Jersey, New York, Vermont, and Ohio, and most have since become part of new buildings. "The buildings are transformed. Even if you can't see it, it's there," says Maltz, describing his now-permanent art. *S.L.*



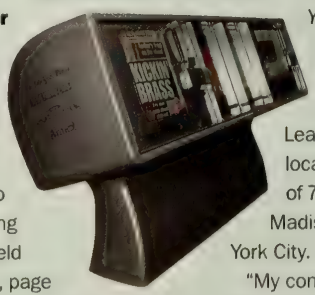
Big-box art from Russell Maltz.

Committee recommends removing Soldier Field from landmarks list A federal advisory committee of the National Park System has voted to recommend removing Chicago's Soldier Field [RECORD, May 2004, page 114] from the list of National Historic Landmarks. On September 23, the committee unanimously agreed that the $660 million renovation to the football stadium destroyed its historic character. The recommendation now goes to U.S. Interior Secretary Gayle Norton, who is likely to make a final decision by the end of the year. *J.E.C.*

Peter Cook joins HOK Archigram founder Peter Cook, outgoing head of architecture at the Bartlett School of Architecture in London, has a new commercial future before him. Following the success of the Kunsthaus in Graz [RECORD, January 2004, page 92], the riverside building he designed with Colin Fournier, new projects beckon, most notably an appointment as design principal of HOK International in London. Cook, who received many offers, says that working on the Kunsthaus has whetted his appetite to concentrate on being a practicing architect, and he has given a full endorsement of HOK's embrace of "the interdependence between research and design." Cook will share his time equally between HOK International and HOK Sport. *L.B.*

Rashid designs news rack for the new millennium Just when you thought architects had run out of things to design, Karim Rashid has unveiled a prototype for a news rack. The 7-foot-wide, 3.5-foot-tall, 24-inch-deep work is made of curving, light-silver-colored fiberglass that bends audaciously backward. It holds *The New York Times*, the *New York Post*, and publications from the Gotham Writers Workshop and the Learning Annex, and is located on the corner of 77th Street and Madison Avenue in New York City.

The news rack of the future?



"My concept was to have it have it function as a piece of street furniture—something functional, yet beautiful," says Rashid.

The city has allocated $475,000 for the project, which will eventually include more than 60 Rashid-designed boxes placed along Madison Avenue between 60th and 86th Streets. *S.L.*


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Dates & Events

New & Upcoming Exhibitions

Suspending Beauty: The Verrazano-Narrows Bridge Turns Forty
New York City
November 19, 2004–March 20, 2005
In celebration of the 40th anniversary of the opening of the bridge linking Brooklyn and Staten Island, this exhibition will demonstrate the story of the building of one of the last colossal public works projects in New York City. With scale models of the bridge, original construction drawings by Lili Rethi, photographs, bridge artifacts, and memorabilia from bridge designer Othmar Amman. At the Brooklyn Historical Museum. Call 718/222-4111 or visit www.brooklynhistory.org.

The Reopening of Manhattan's Museum of Modern Art
New York City
November 20, 2004
The reinstallation of its collection in the newly renovated and expanded building designed by Yoshio Taniguchi will include the MoMA Department of Architecture and Design's overview of its collection of design objects, architectural models, and graphic design from the mid-19th century until today, as well as an installation of architectural drawings by the most eminent architects of the 20th century. At the Museum of Modern Art. Call 212/708-9400 or visit www.moma.org.

Projecting Reclamation in Design
Cambridge, Mass.
December 1, 2004–January 17, 2005
In the United States alone, new mining will create more than 100,000 square miles of land needing reclamation by the year 2230 as well as 500,000 abandoned mines requiring reclamation. This exhibition focuses on current and future directions for landscape architects and designers to consider in engaging in reclamation. At the Harvard Design School. Call 617/495-5453 or visit www.gsd.harvard.edu.

Light Structures: The Work of Jorg Schlaich and Rudolf Bergermann
New Haven
November 15, 2004–February 4, 2005
Organized by Frankfurt's Deutsches Architektur Museum, this exhibition focuses on the work of the structural engineering firm Schlaich Bergermann and Partner. At the Yale School of Architecture. Call 203/432-2296 or visit www.architecture.yale.edu.

ARCHLAB: New Experiments in Architecture, Art and the City
Tokyo
December 21, 2004–March 13, 2005
The exhibition explores revolutionary designs by international architects from the 1950s to the present, uncovering the origins of radical and visionary approaches to building design and urban planning that have changed the way we look at the city. At the Mori Art Museum. Call 813/5777-8600 or visit www.mori.art.museum.

Origami as Architecture
Washington, D.C.
Opens November 6, 2004
This exhibition showcases traditional origami, the art of paper folding, and new forms depicting architecture inspired by this art. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Chicago Architecture: Ten Visions
Chicago
November 26, 2004–April 3, 2005
This exhibition illustrates a range of ideas concerning the future of Chicago and the built environment from 10 influential, locally based architects. In the Daniel F. and Ada L. Rice Building at the Art Institute of Chicago. For further information, call 312/443-3600 or visit www.artic.edu/aic.

Nine Museums by Yoshio Taniguchi
New York City
November 20, 2004–January 31, 2005
This opening exhibition will present the new Museum of Modern Art in the context of the other extraordinary art museums that Taniguchi has designed over the past 25 years and will address four integral themes in the architect's work: materials, proportion, natural light, and movement. At the Museum of Modern Art in Manhattan. Call 212/708-9400 or visit www.moma.org.

Huyghe + Corbusier: Harvard Project
Cambridge, Mass.
November 18, 2004–April 17, 2005
Pierre Huyghe celebrates Harvard's Carpenter Center in conjunction with the 40th anniversary of Le Corbusier's only north American building. The multimedia project will explore Le Corbusier's vision for the Carpenter Center, including multiple components that respond to the design history and its relationship to Harvard. At the Carpenter Center. Call 617/495-9400 or visit www.artmuseums.harvard.edu.

Experiments with Truth
Philadelphia
December 4, 2004–March 12, 2005
The exhibition is an international survey of contemporary filmmaking intended to reassess the influence of cinema and the use of documentary within contemporary visual art practices. Architects Elizabeth Diller and Ricardo Scofidio, as well as Paul Kuranko, media arts specialist at the Guggenheim Museum, will assist in designing experimental spaces between gallery and theater that balance the conceptual and practical demands of each artist's installation. At the Fabric Workshop and Museum. Call 215/568-1111 or visit www.fabricworkshopandmuseum.org.

Ongoing Exhibitions

Alejandro Aravena: X
Cambridge, Mass.
Through November 17, 2004
As the first comprehensive display of the architect's work to be displayed in the United States, this exhibition features 10 projects selected by the architect, as well as entries for the "Elemental" competition for social housing in Chile. At the Harvard Design School. Call 617/495-5453 or visit www.gsd.harvard.edu.

Glamour: Fashion, Industrial Design, Architecture
San Francisco
Through January 17, 2005
The concept of glamour is based on a notion of excess and has been glorified in the discipline of fashion. Conversely, glamour has been marginalized in industrial design and even reviled in architecture, where the pared-down aesthetics of Modernism and Minimalism have prevailed since the middle of the 20th century. On view are haute couture by Dior and Versace, autos from Jaguar and Bentley, architectural works by Philip Johnson and Herzog and de Meuron. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.



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Dates & Events

RoadTrip: Racine Art Museum: Building an Institution
Chicago
Through March 7, 2005
Through a series of specially commissioned portraits by Scottish photographer Graham MacIndoe, this exhibition explores the many individuals and groups who made the construction of the new museum possible. In the John Buck Company Lecture Hall Gallery at ArchCenter. Call 312/922-3432 or visit www.architecture.org.

Bridging the Drive: Pedestrian Bridge Designs for Lake Shore Drive
Chicago
Through January 9, 2005
Some of the world's best known architects and engineers have submitted designs for the pedestrian bridges across Lake Shore Drive. All the entries will be on view. At the ArchCenter. Call 312/922-3432 or visit www.architecture.org.

Lina Bo Bardi: The Freedom of Architecture
Venice, Italy
Through November 15, 2004
With over 200 original drawings, models, and design objects, the exhibition attempts to reread the architectural work of Lina Bo Bardi, including the art and culture museums of San Paolo, Bahia, Ibirapuera, and numerous residences. It will explore her inexhaustible creativity as stage and costume designer, furniture and jewelry designer, as well as her graphic design work and projects of urban planning. At Galleria Internazionale d'Arte Moderna di Ca' Pesaro. Call 041/257-1993 or visit www.iuav.it.

Bob the Roman: Heroic Antiquity and the Architecture of Robert Adam
New York City
Through December 4, 2004
Originated by the Sir John Sloane's Museum in London, this exhibition includes 83 18th-century architectural drawings and focuses on the three years that Robert Adam spent in Rome, when he engaged both Charles-Louis Clerisseau and Giovanni Battista Piranesi to teach him to draw. In the Gallery at the New York School of Interior Design. Call 212/472-1500 or visit www.nysid.edu.

Paul Rudolph: The Florida Houses and the Cannon Chapel
Atlanta
Through December 31, 2004
Paul Rudolph, a pioneer of 20th-century architecture, began his career designing intimate beach houses on the west coast of Florida. This exhibition celebrates the innovation and drive that propelled Rudolph to international renown in the 1960s. At the Museum of Design Atlanta. Call 404/688-2467 or visit www.museumofdesign.org.

Mid-Century Modern Revisited: Design 1943–1953
Houston
Through November 28, 2004
This exhibition offers viewers a unique and wide-ranging introduction to 10 of the most creative and influential years in the history of contemporary design. At Brazos Projects. For additional information, visit www.brazosprojects.org .

Sergio Rodrigues: Sultan in the Studio
New York City
Through November 17, 2004
Rodrigues is revered in his native Brazil as the country's first truly Modern designer and author of an authentically "Brazilian" style of furniture and objects. The first major American retrospective of his work remains on view for several weeks at R 20th Century. For information, call 212/343-7979 or visit www.r20thcentury.com.

Troubled Search: The Work of Max Abramovitz
New York City
Through December 11, 2004
Troubled Search is the first in-depth survey of the career of Max Abramovitz, who was half of the noted architectural firm Harrison & Abramovitz. He is best known for his work on major postwar urban projects such as the United Nations headquarters and Avery Fisher Hall at Lincoln Center, both in New York City. At the Miriam and Ira D. Wallach Art Gallery. Call 212/854-2877 for more information.

Aerospace Design: The Art of Engineering from NASA's Aeronautical Research
Washington, D.C.
Through December 5, 2004
This exhibition features more than 65 artifacts from NASA's collection, including wind tunnel models and designs for conceptual airplanes. At the Octagon. Call 202/638-3221 or visit www.theoctagon.org.

Lebbeus Woods: Experimental Architecture
Pittsburgh
Through January 16, 2005
One of the most innovative experimental architects working today, Lebbeus Woods combines an extraordinary mastery of drawing with a penetrating analysis of architectural and urban form, as well as social and political conditions, that is nourished by his wide knowledge of fields ranging from philosophy to cybernetics. At the Heinz Architectural Center. Call 412/622-3131 or visit www.cmoa.org.

Lectures, Conferences, and Symposia

Jean-Louis Cohen
New York City
November 22, 2004
A lecture by Jean-Louis Cohen, Sheldon H. Solow Professor in the History of Architecture, Institute of Fine Arts, N.Y.U., on the topic of "Infinitely Fresh, Infinitely New: Echoes of Richard Neutra and Los Angeles Architecture in Europe." Part of Columbia University's Architecture, Planning, and Preservation fall lecture series. In Wood Auditorium, Avery Hall. Visit www.arch.columbia.edu.

Tall: The American Skyscraper and Louis Sullivan
New York City
November 26, 2004
A film directed by Manfred Kirchheimer takes a poetic and wise new look at an important chapter in architectural history: the development of the American skyscraper between the late 1860s and early 1920s and the rivalry between Louis Sullivan and Daniel Burnham, two men who changed the skyline. At the Museum of Modern Art. Call 212/708-9400 or visit www.moma.org.

Yoshio Taniguchi and MoMA's Architectural Legacy
New York City
November 30, 2004
An informal slide lecture with Steven Zucker on the architect of the newly renovated Museum of Modern Art in Manhattan. At the Arts Consortium Auditorium. For information, call 212/708-9400 or visit www.moma.org.

2004 Architectural Record Innovation Conference
New York City
November 15–16, 2004
Because tall buildings present so many architectural and engineering challenges and are often well financed, they frequently inspire research and development and are proving grounds for new structural, mechanical, electrical, and safety breakthroughs. This conference will present case studies of the innovative aspects of three tall buildings in various stages of completion. The case studies will include presentations by individual members of the design team: The architect, and structural and environmental engineers. At the Millennium Broadway Hotel. Call 212/904-4634 or visit www.construction.com.



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Dialogues on the Relationship Between Design and Art
New York City
November 6, 2004
The symposium will explore the definitions of art and design at a time when traditional distinctions between the two are becoming increasingly ambiguous. Distinguished panelists will cover topics including "Design and Art from a Historical Perspective"; "Thesis, Antithesis, Synthesis: A Conversation"; "The Continuum between Art and Design"; and "The Designer's Perspectives." At the Cooper Union. Call 212/849-8380 or visit www.cooperhewitt.org.

Robert Hillier: When Bigger Gets Better: A Cottage Industry Goes Corporate
New York City
November 11, 2004
To Hillier, the building of the fifth-largest architectural firm in the country is a result of bringing together design excellence and good business. His 300-person firm's work can be found in 42 states and 30 foreign countries. Hillier will lecture at the City College of the City University of New York. Call 212/650-7118 or 212/650-7312 or visit www.ccny.cuny.edu.

Tom Hahn
Scottsdale, Ariz.
November 30, 2004
Tom Hahn of Sol Source Architecture + Building discusses "Architecture of the Four E's—Environment, Economy, Experience and Ethics," in relation to the work of Samuel Mockbee and the Rural Studio and local and international examples of environmentally sensitive, affordable architecture. At Scottsdale Museum of Contemporary Art. Call 480/994-2787 or visit www.smoca.org.

Anthony Floyd
Scottsdale, Ariz.
December 9, 2004
Anthony Floyd, sustainable building manager for the City of Scottsdale, discusses efforts to promote "green" design and environmentally responsible building in the Sonoran Desert. At the Scottsdale Museum of Contemporary Art. Call 480/874-4630 or visit www.smoca.org.

Jeffrey Kipnis
Charlotte
November 22, 2004
A lecture followed by a screening of the film *A Constructive Madness* ("in which Frank Gehry and Peter Lewis spend a fortune and a decade, end up with nothing, and change the world"). The film was written by Jeffrey Kipnis, professor, Knowlton School of Architecture, Ohio State University. At the University of North Carolina at Charlotte. Call 704/687-4841 or visit www.coa.uncc.edu.

Joseph Rosa
New York City
November 9, 2004
Design historian Joseph Rosa, curator of the exhibition *Glamour: Fashion, Industrial Design, Architecture*, will discuss how new design and construction technologies have allowed once-excessive forms to become integral to function. At the Bard Graduate Center. Call 212/501-3011 or visit www.bgc.bard.edu.

Fourth Symposium: Plastics—Past and Present
Weil am Rhein, Switzerland
November 24–25, 2004
The fourth symposium on restoring synthetic materials will focus on the various issues pertain-



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ing to plastics and conservation. Cosponsored by AXA Art and Vitra Design Museum. For further information, call 49 0 7621/702-3153 or visit www.design-museum.de.

Winner's Lecture: City Lights Design Competition
New York City
November 8, 2004
The winner of the City Lights Design Competition, an international competition to select a new streetlight design for New York City, will discuss their winning entry and work. At the Center for Architecture. Call 212/683-0023 or visit www.aiany.org.

Professional Development: Strategies to Plan and Execute Effective Proposals
New York City
November 19, 2004
The Society of Marketing Professional Services N.Y. Chapter (SMPS-NY) offers informational events for principals and marketers in the field of professional services. At Haworth Showroom. Call 212/921-0061 or visit www.smpsny.org.

The Residential Architecture of John Russell Pope
Washington, D.C.
November 17, 2004
James Garrison will discuss Pope's residences in Washington and show how they relate to his body of work. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Enrique Norton
Washington, D.C.
November 18, 2004
Principal of Mexico City's TEN Arquitectos, Enrique Norton will present the firm's projects, which include the Chopo Museum of Contemporary Art and Brooklyn's Library for the Visual and Performing Arts. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Part 3: Wind
Houston
December 1, 2004
The final forum in the series "Earth, Fire, and Wind" sponsored by the Rice Design Alliance, "Part 3: Wind" will address the larger forces beginning to coalesce that will reconfigure our region, including economic, environmental, and social conditions. At the Museum of Fine

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Dates & Events

Arts, Houston. Visit www.rice.edu.

Meejin Yoon
San Francisco
November 8, 2004
Meejin Yoon, an architect who teaches at the Massachusetts Institute of Technology, will speak at Timken Lecture Hall, California College of the Arts. Call 415/703-9562 or visit www.cca.edu.

Rodolfo Machado
San Francisco
November 15, 2004
Rodolfo Machado, a principal of Machado and Silvetti Associates and chair of the Department of Urban Planning and Design at Harvard University, will speak as part of the California College of the Arts Public Lecture Series. At Timken Lecture Hall. Call 415/703-9562 or visit www.cca.edu.

Michael Meredith
San Francisco
November 29, 2004
Michael Meredith is an architect, designer, and artist whose work has been shown at the Chinati Foundation. As part of the Public Lecture Series at the California College of the Arts. At Timken Lecture Hall. Call 415/703-9562 or visit www.cca.edu.

SITE:OFFSITE Redefining the Manufactured House
Austin, Tex.
November 19–20, 2004
The University of Texas at Austin School of Architecture is hosting a conference investigating groundbreaking work done by architects and industry in the factory production of houses. The focus will be on improving quality and resource effectiveness, historical example, cultural implications, and new fabrication technologies. For further information, call 512/471-1922 or visit www.utexas.edu/architecture.

Frederic Church's Olana: Vision and Reality
New York City
November 10, 2004
Evelyn Trebilock, head curator at Olana; Daniel Lane, the architectural conservator; and Jan Hird Pokorney, Olana project manager, will give an illustrated talk about American landscape painter Frederick Church's home and studio. At the General Society of Mechanics and Tradesmen. Call 212/730-9646 or visit www.classicist.org.

New Classicism: The Revival of Traditional Architecture
New York City
November 17, 2004
Elizabeth Dowling, author and associate professor at Georgia Tech, will speak about her new book on the revival of traditional architecture. At the General Society of Mechanics and Tradesmen. Call 212/730-9646 or visit www.classicist.org.

The U.S. Capitol: Its Lessons for Today
New York City
November 23, 2004
Henry Hope Reed, honorary president and scholar-in-residence of the Institute of Classical Architecture and Classical America, and author of numerous books on architecture, urbanism, and the arts, will speak about his new book, *The U.S. Capitol: Its Architecture and Decoration*. At the Urban Center. Call 212/730-9646 or visit www.classicist.org.

International Christmas Workshop: Interactive Ideas
Istanbul
Application Deadline: November 19, 2004
Kadirhas University is offering two communication design workshops to design students and young professionals studying/working in the following fields: Architecture/Interior Design, Information Design, Information Management, Visual Communication, Graphic Design, Product Design, Multimedia/Computer Science, and Social Sciences. For more information, visit www.interaction-idea.info.

Urban Land Institute Fall Meeting
New York City
November 2–5, 2004
The Urban Land Institute will examine the future for urban development and investment, including trends in all segments of the real estate industry. Former U.S. President Bill Clinton and former New York City Mayor Rudy Giuliani will be headlining an impressive list of industry analysts and professionals who will discuss political, demographic, economic, social and cultural issues affecting urban areas. At the Hilton New York. Call 202/624-7086 or visit www.uli.org.

The NFPA Fall Education Conference
Miami Beach
November 14–17, 2004
The National Fire Protection Association Conference will provide professional development opportunities for fire and life safety specialists. At the Fontainebleau Hilton. For further information, visit www.nfpa.org/meetings.

Architecture Exchange East
Richmond
November 10–12, 2004
The region's largest building and design conference, featuring more than 60 educational sessions for architects, planners, engineers, interior designers, contractors, and landscape architects. Paul Goldberger, Pulitzer Prize–winning architecture critic and *New Yorker* staff writer, will present the keynote address. At the Greater Richmond Convention Center. Call 804/644-3041 or visit www.aiava.org.

20th Annual Build Boston
Boston
November 16–18, 2004
The premier convention and trade show for design, building, and management professionals brings together more than 350 of the nation's leading suppliers of building products and services and more than 14,000 international and U.S. architects, specifiers, engineers, builders, contractors, facility managers, and other industry professionals. At Seaport World Trade Center. Visit www.buildboston.

Competitions

The 2005 Latrobe Fellowship
Deadline: February 4, 2005
The purpose of the fellowship is to support research that will increase the knowledge base of the architecture profession. Sponsored by the AIA College of Fellows. Visit www.aiai.org/fellows_latrobe_2005 for more detailed information.

II International Best Diploma Projects Show–Competition
Florence, Italy
February 17–March 17, 2005
Deadline: November 15, 2004
The second edition of an international exhibition entitled *For an Ecological Future: Architecture, Environment and Design* is organized by the Romualdo Del Bianco Foundation for the education, promotion, and exchange of knowledge among people from different countries and cultures. Visit www.fondazione-delbianco.org.

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Dates & Events

2005 Rudy Bruner Award
Deadline: December 13, 2004
The Rudy Bruner Award is given to urban places that demonstrate the successful integration of effective process, meaningful values, and good design. RBA winners are distinguished by their social, economic, and contextual contributions to the urban environment, and often provide innovative solutions for our cities' most challenging problems. For information, call 617/715-3184 or visit www.brunerfoundation.org.

Flight 93 National Memorial Design Competition
Deadline: January 2005
The response to the violent acts in the skies over southwestern Pennsylvania on September 11, 2001, will be a National Memorial to the people who died in what has become known as the first civilian act of defense in the war on terrorism. The design competition welcomes all submissions of ideas that will commemorate the 40 heroes of Flight 93. For more information, visit www.flight93memorialproject.org.



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McCormick Tribune Foundation Icon/Centerpiece Competition
October 11–December 17, 2004
Architects, designers, and artists are invited to participate in a juried competition to create a defining work of art to serve as the centerpiece of a new museum dedicated to First Amendment rights and corresponding responsibilities. Visit www.mccormickmuseum.org for more information.

20th Anniversary Architecture in Perspective Competition
Deadline: December 3, 2004
The American Society of Architectural Illustrators' international competition honors the finest works of architectural illustration, both hand and digital. Call 614/552-3729 or visit www.asai.org for submission guidelines.

The CRCP Achievement Awards Program
Deadline: November 15, 2004
The Continuously Reinforced Concrete Pavement (CRCP) Achievement Awards Program includes four different highway categories, as well as a nonhighway structure performance category, as a way for owners, designers, and builders to showcase their assets and be recognized by their peers. For further information, call 847/517-1200 or visit www.crsi.org.

Knokke Casino Architectural Competition
Deadline: November 15, 2004
This competition is an open invitation to architects from around the world to engage in the creative design of unique architecture for a new casino. For more information, visit www.knokke-heist.be.

Ceramic Tiles of Italy Design Competition
Deadline: January 30, 2005
North American architects and interior designers are invited to submit residential, commercial, or institutional projects featuring Italian ceramic tile completed between January 2000 and January 2005. Visit www.italiatiles.com or www.italytile.com.

E-mail event and competition information two months ahead of event or submission deadline to elisabeth_broome@mcgraw-hill.com.



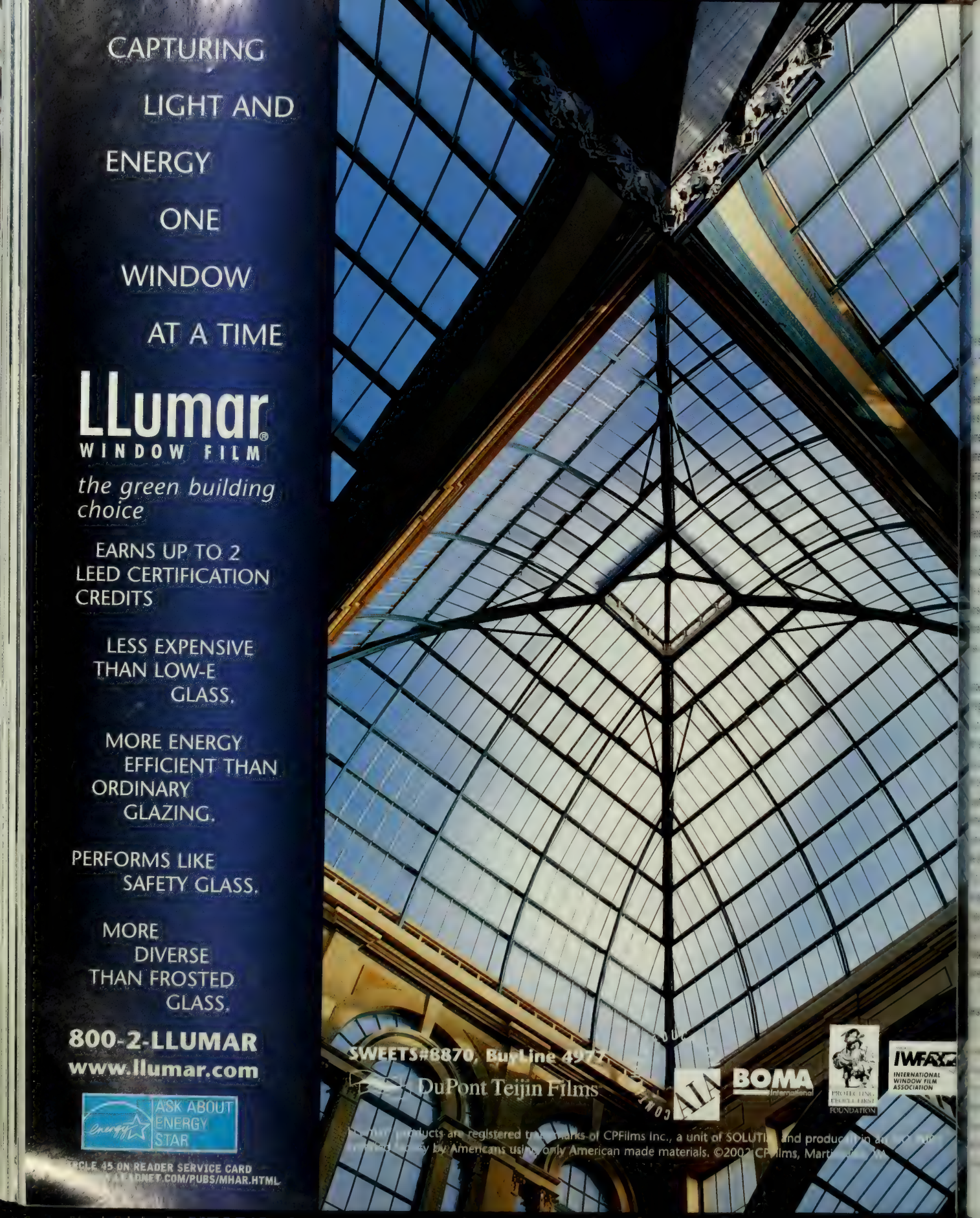
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After the storms: Geologists' perspectives for architects on building in coastal zones

Commentary

By David M. Bush, William J. Bush, and Robert S. Young

The stunning 2004 hurricane season highlights the folly of developing high-risk coastal areas. Yet in the wake of the destruction, the emphasis is already being put on rebuilding in the same high-hazard zones. This pattern of coming back "bigger and better" has been repeated numerous times in recent decades—such as the pushes after Hurricane Frederic on the Gulf Coast (1979) and after Hurricane Opal in the Florida Panhandle (1995)—setting the stage for greater financial loss, worsening evacuation efficacy, and increasing the potential for greater loss of life in the next storm.

Simply put, many coastal-zone properties should not be developed. Design and engineering is not going to change the rate of sea-level rise nor lessen the frequency or intensity of storms and their associated winds, waves, storm surge, and runoff. It is true that we have gotten better at predicting storm paths and evacuating threatened areas. We are even designing structures that can withstand much higher winds than in the past. But ultimately, developing high-risk areas is a losing battle, maybe not for the builder, but certainly for the homeowner and the general public.

The rush to the shore in recent decades has resulted in population growth rates three times the national average for areas within 5 miles of the shoreline. The resulting demand for ocean views and beach and waterfront access encourages development in high-to-extreme-risk areas, such as the beachfront, on lowlands adjacent to sounds, and next to finger canals—placing ever-increasing property investments and more residents at risk from the impact of storm winds, waves, and flooding.

The concentration of population and vulnerable development is especially alarming given the projected increase in hurricane frequency and intensity due to changing cyclical climatic patterns and possibly from global warming, which portends an ominous future for coastal disasters. The problem must be addressed now.

David M. Bush is a professor of geosciences at the State University of West Georgia; William J. Neal is a professor of geology at Grand Valley State University; and Robert S. Young teaches in the geosciences department at Western Carolina University.

Storm history—learning from the past

The probability that a hurricane will make landfall at any given point along the coast in any given year is low, and the probability of a great hurricane almost makes such an event seem unlikely; but low probabilities give a false sense of security. If probability is a guidepost, then planners and designers should consider the probability of a major storm occurring during the lifetime of the structure. In that view, storm history tells us that such a storm is almost a certainty. Furthermore, as we've seen from the convergences of Charlie, Ivan, and others, the occurrence of one hurricane does not reduce the likelihood that a similar storm will strike again in the remainder of the season, next year, or in multiple years to come.

Thanks to Weather Service warnings, radio and television communications, and evacuation plans, death tolls from modern hurricanes have declined. But this decline has also led to a false sense of security and contributed to complacency about controlling coastal growth. Hence, while storm deaths have declined, damage totals have increased dramatically. Much of this cost is born not by coastal residents and developers, but by all taxpayers and any member of the general public who pays an insurance premium. Not surprisingly, greater degree of property loss parallels the number of unsafe developments, those where the carrying capacity of the coastal zone has been exceeded.

Population growth has reached such levels that it has begun to exceed the capacity for safe evacuation. Evacuation time in some areas takes considerably longer than the minimum time allowed for advance evacuation warning (as little as 9 to 12 hours).

Our knowledge of coastal hazards, carrying capacity, storm history, and risk mapping has been in place since the 1970s, but the coastal community at large has ignored this available science. Federal and state regulations of the coastal zone under the Coastal Zone Management Act, the Coastal Barrier Resources Act, the National Flood Insurance Program, and similar programs also have failed to check unsafe development or the escalating costs of storm damage. For example, much of the northern



A row of houses in Orange Beach, Alabama, were inappropriately sited on top of a dune instead of behind it, leading to significant damage.

end of North Topsail Beach, North Carolina, is in a coastal barrier resources zone designated so that newly constructed homes and businesses are not eligible for national flood insurance. However, after Hurricane Fran (1996), federal assistance was provided to the town to rebuild infrastructure such as roads and bridges, which allow for future continued development, thus defeating the goal of the federal program.

Hazards, economics, and politics

Nature is not the only arena of the coastal zone, and hazardous processes are not the only players. Property owners, planners, and public officials can mitigate the impact of hazards, but their domain is one of politics and economics, governed by a unique set of rules. Our survey of coastal communities reveals great diversity in responses, yet enough similarities exist among communities to make several generalizations.

One incongruity in coastal development is that development sites are chosen on the basis of market forces, not Nature's forces. As a result, most coastal communities came into existence without hazard planning, although there are a few exceptions, such as Kiawah Island, South Carolina, and Seaside, Florida. In older developments, residents learned from experience, and low-risk sites tended to be developed first, leaving high-risk areas, such as the New Jersey Shore and Orange Beach, Alabama, to accommodate today's spiraling growth. With most recent coastal development, the emphasis is on build and sell, not analysis of hazard risk, hazard mitigation, or future relocation. Furthermore, the construction industry prospers in the post-storm rush to rebuild. As a result, one catastrophe often sets the stage for bigger catastrophes. Post-catastrophe "recovery" becomes a time of shock and haste to put things right again. Instead of implementing careful relocation and risk reduction, recovery efforts result in houses and multihousing units rebuilt "bigger and better" in the same high-risk zones.

Recommendations: the rules of the sea

Our first recommendation to the thoughtful architect is to assess the hazards of a particular building site with the goal of steering clients out of high-risk areas. If a project must be designed within a potential coastal hazard area, we offer the following guidance: recognizing the physical processes active within coastal environments is the fundamental step toward defining hazard areas, and it forms the basis of a coastal-processes approach to site selection, building design, and property damage mitigation. There are also other important factors to keep in mind.

First, the coastal zone is unique and requires unique management strategies. Coastal environments are far more dynamic than inland areas. The traditional grid-development pattern and related construction used inland is inappropriate for the coastal zone and increases the probability of impact by natural processes.

Moreover, individual coastal physical processes must be identified and understood from a holistic perspective. Beaches, dunes, marshes, maritime forests, and the offshore are part of one large interrelated geobiologic system. Building in the path of natural processes creates the hazard.

Additionally, building siting, design, and property-damage mitigation must take into account the entire character of coastal processes and environments. Solutions need to be broader than considering single risk factors or individual sites. Development plans must take into account the regional effects of sea-level rise, erosion rates, flood zones, overwash zones, inlet proximity, and other coastal processes/hazards. Property-damage potential is site-specific, but each site is different. The storm-to-storm crisis approach should be replaced by established long-term solutions for this long-term problem, such as planned relocation.

Finally, be sure to conserve, augment, and repair. Regional and site planning should always seek to maintain the natural environment. Sand volume must be preserved or increased. Vegetation cover provides natural protection. When a landform is altered, its stability is altered. Stabilization may be augmented by adding and anchoring sediment, planting natural species, or even constructing artificial landforms. Alterations due to development should be repaired. Damage to the natural setting reduces the afforded natural protection. Such damage must be repaired to mitigate future property damage. In many cases, such efforts will entail little more than restoring small areas to their pre-development state by rebuilding dunes and planting grasses and other maritime vegetation.



Multistory buildings are usually considered well-enough engineered to withstand a hurricane. But in Orange Beach, a medium-rise building collapsed due to undermining and direct wave attack during Hurricane Ivan.

Final note

Hazard assessments and mitigation recommendations are the realm of scientists and engineers, but implementation falls into the political/legal arena. While protective regulations such as dune protection ordinances, setback laws, and zoning are based on scientific principles, the rules of politics often override the rules of the sea. One example is the overuse of building variances. In some coastal communities, such variances seem to be the rule rather the exception, again putting property and people at risk. Florida has granted variances for buildings to be constructed seaward of the the construction setback line, and in Kill Devil Hills and South Nags Head, North Carolina, where shore hardening structures are not permitted, temporary sandbag walls and groins have been permitted, defeating the purpose of regulation. The architect has the final opportunity to reduce hazard vulnerability in developing site and building plans that follow the rules of the sea. ■



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For and about the new generation of architects

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FOR THE EMERGING ARCHITECT

This month, archrecord2 visits Los Angeles to check out residential design and then jets off to New York to look into intercontinental design. In Work, two busy architects moonlight in their downtime to transform a Midcentury Modern house into a home for themselves. In Design, we catch up with an Australian architect whose work is featured in a traveling exhibition. As always, visit our Web site for more information on these stories.

WORK

Updating Modern L.A. Living



It could be the premise of a new reality television show—a young couple, a house in need of renovations, a small budget, no time, but lots of energy. The twist in this plot is that both protagonists are architects working in Los Angeles. By day, Chinmaya Misra, a graduate of Sci-Arc, works in the offices of the Jerde Partnership, while her husband, Apurva Pande, a graduate of the architecture program at UCLA, is employed in the offices of Frank Gehry.

Misra and Pande began by scouting the L.A. area for affordable yet distinct neighborhoods for their future home. Their search was over when they discovered a dilapidated 1950s Modern house in West Adams. "It was in terrible shape, but we wanted to keep with the spirit of the house. We decided not to change the footprint and to retain the shell," says Pande. With the prospect of their own design-build project, the couple agreed to several self-imposed guidelines. "We knew this would be a fully engaging project, and we knew we would have to do it on our own time, as our office jobs are our first priority," explains Misra. They also agreed to a strict rule—no financial help from others. Armed with 10 new credit cards, the pair began their moonlighting.

To begin the design process, the two agreed—given their shared enthusiasm for experiments in Modernism—to eschew ideological predilections. "We wanted to avoid rigid approaches," Misra explains, "but we had a strongly held principle regarding the use of physical models as a litmus test." No matter how mundane the detail, it was worked into one of the 11 models the couple eventually stockpiled in their increasingly cramped apartment. Pande admits that their method of designing as they built, as well as their reliance on models rather than drawings, made the process more complex and time-consuming. But, he says, "If it weren't for the detailed models, the contractor would not have understood what we were trying to achieve."

The 1,600-square-foot, three-bedroom residence was conceived to be a free-flowing space between the interior and outdoors. Within the main living area, the "spine" of the house runs from the front to the back door. Incorporating what the pair refer to as "a creative interpretation of walls"—surfaces punctuated by openings—and installing skylights overhead, Misra and Pande have created the feeling of open space in their newly designed interior. *Randi Greenberg*









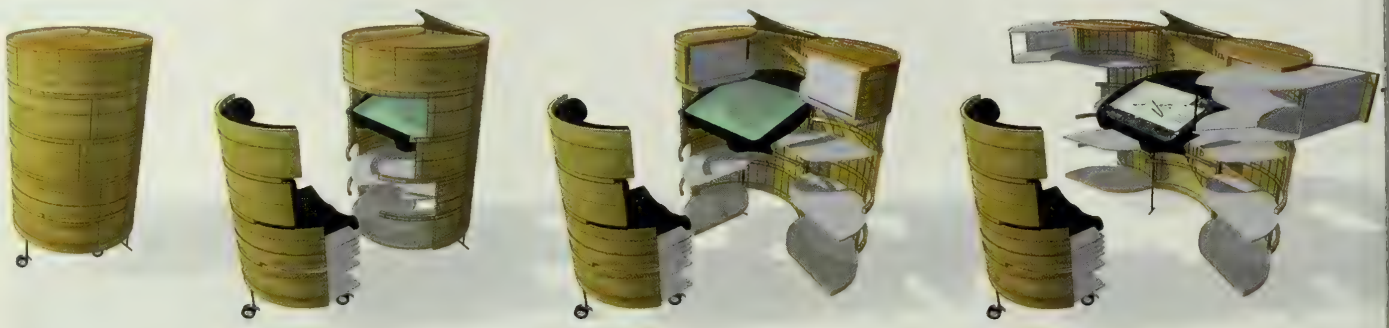
Leaving the shell of the house intact, a more modern facade was created (right two). The interior is articulated by walls that have been punctured to provide openings and nooks.

DESIGN

Discovering Designs from Down Under

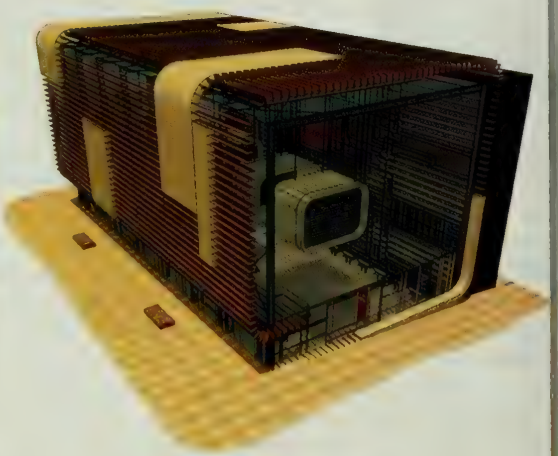
This past September, the Art Directors Club (ADC) in New York City, a membership organization for visual communications, premiered its most recent biennial, *Young Guns*, a competition that celebrates innovative people under the age of 30 in creative fields including graphic design, art direction, advertising, photography, and publishing. In its fourth year, ADC *Young Guns 4* widened its normally graphic-based scope to include young professionals in the fields of environmental design, object design, and fashion design. Opening the contest to a worldwide pool of entrants, as opposed to invitation-only participants from the New York City area, was also new to this year's competition. Australian architect Andrew Maynard took full advantage of this opportunity and has become the only architect (and Australian) chosen to exhibit at *Young Guns 4*.

Maynard felt that thanks to the expansion of categories, specifically in environmental and object design, he had found his niche. "I felt at the very least the judges would find my Design Pod interesting," he says. And on the opening night of the exhibition, he discovered he was right. "One of the organ-



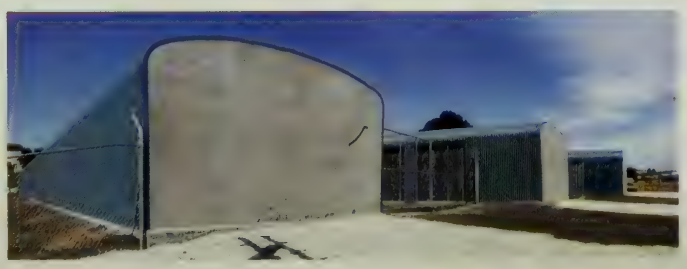
The Design Pod, Competition Entry, 2000
In a time when the office has become more of a shared and less of a private environment, Maynard designed a personal workstation that can create a sense of ownership and territory.





Japan Library, Competition Entry, 2003
In response to the conventional library, in which the sorting and delivery of books is often a hidden, mechanized, and digitized process, this design seeks to make the experience more open and visual.

Kings Meadows Self Storage Tasmania, Australia, 2003
In exploring the "architecture of the mundane," Maynard was faced with the task of creating suburban storage units. The architect believes in the importance of reponsible suburban design.



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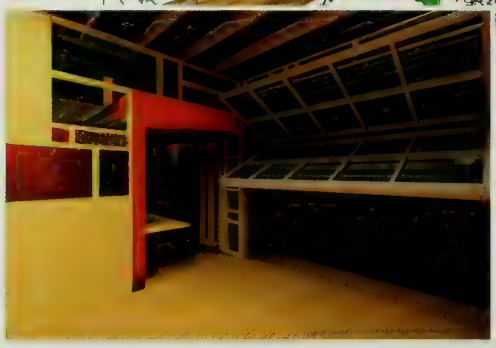
izers of the event explained to me that the judges were particularly enthusiastic about the Design Pod," the architect continues. Recognized with both an Australia/New Zealand Award as well as the grand prize of the 2000 Asia Pacific Design Award, Maynard's Design Pod is a new way of thinking about personal space in an office environment. The lightweight structure could allow the user to easily transport the pod, while the media component—or Design Desktop—would be completely viable outside the office.

While many other competitions are category-driven, the *Young Guns 4* recognizes an entrant's entire body of work. Thirty-year-old Maynard, who received a bachelor's degree in both environmental design and architecture, opened his own practice in 2002 and now has the opportunity to showcase his portfolio to an international audience. The cross section of the architect's projects shown at *Young Guns 4* includes built work, current commissions, and competition entries. Maynard's work runs the gamut from residential to commercial buildings to conceptual designs. His new concepts in design, including a Japanese library, an arts precinct, and protest shelters, have won him international attention.

After the show, consisting of all 35 selected participants, closes in New York at the end of October, it will travel worldwide. *R.G.*

For more of Andrew Maynard's completed projects and works in progress, go to archrecord.construction.com/archrecord2/





Beachcroft Orth Residence
Victoria, Australia, 2001
A study in "honesty in design," the timber used in construction was left in its raw state to weather over time. Synthetic materials used in the project—laminate and paint—provide a stark contrast to the natural materials.

Styx Valley Protest Structure
Tasmania, Australia, 2004
Although protesters have already been gathering within the forest, this new design concept would shelter them in extreme weather conditions. Additionally, the shelter would be attached to three trees, thereby spreading the load and saving more endangered trees in the process.





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Getting it right (maybe a little too right) in well-behaved England

Critique

By Robert Campbell, FAIA

Think of this column as a letter to a friend about a recent trip to England.

I was tagging along with the Seaside Pienza Institute, which is an informal gang of mostly American architects, educators, and developers all of whom subscribe, more or less, to the principles of the so-called New Urbanism. They agree, at least, that they prefer walkable towns to car-culture sprawl.

Sprawl is something you certainly don't see much of in rural England. It's amazing to an American: no roadside Dairy Queens, motels, billboards, used-car dealerships, suburban malls, or scattered single-family houses. Beautiful as it is, it's possible to get bored. The endless green countryside, unviolated by trade or commerce, bespeaks the heavy hand of a ruling bureaucracy, as it once spoke of a ruling aristocracy. Where, you ask yourself, is the insurgent who breaks the rules? Where is the bubbling up of private initiative that makes life irrational and interesting? Can I buy some fireworks, please?

They don't let sprawl happen. We talked to several government officials who told us there is a greenbelt around every city, town, and village. You can't develop anything in that belt unless you can prove to government planners that (a) there's a need and (b) there's no capacity for growth on existing sites inside the town limits. The "thrill of walking from the town into the country," as one speaker put it, is preserved by government fiat.

I'm certainly in favor of a sharp line between town and country. But with this same group, I toured Tuscany last year. There we discovered that the equally bucolic Italian farm landscape is uneconomic and survives only because it's considered historic and is subsidized by the European Union [RECORD, October 2003, page 67]. England has similar problems, its agriculture now threatened by cheaper overseas imports. One group is addressing that problem with the pleasingly named "Eat the View" initiative, trying to get town dwellers to buy fresh produce grown in the immediate scenic surroundings.

Logical there; heretical in U.S.

Planning happens on a big scale, too. We learned that the government has identified four national corridors where growth will be encouraged. The major one lies along the new rail link to mainland Europe. It's a proposal as logical there as it would be heretical in the U.S.

We visited Poundbury, the new town sponsored by the Prince of Wales and planned by New Urbanist guru Leon Krier, who met us there. He said architects should imitate rather than invent, and noted that "nobody has proposed an anticlassical Chianti." He also said, in a sentence worth thinking about, that "architecture should be divorced from art history."

Poundbury obeys the principles of Jane Jacobs and the New Urbanism. It's mixed-use and dense. The houses don't float on wasteful green lawns; they butt up against one another in traditional rows. Streets wander around as unpredictably as in a medieval village, in a way that's maybe too self-consciously picturesque. Parks are banished to the perimenter, so that the town itself can remain compact and walkable. Cars are tucked semi-visibly in parking courts. It's a real town, not just a bedroom burb, with commerce and light manufacturing.

I have to admit I was amused to learn that although Poundbury is only one-fifth built, the serpent of Nimbyism has already raised its hissing head. A group has been formed that calls itself PROD: Poundbury Citizens Opposed to Density. At the time of our visit, PROD had just succeeded in getting planning authorities to deny permission for a modest new apartment building. These are guys who chose to live in a traditionally dense, compact settlement, and who paid a premium to do so (Poundbury has been a marketing success). They then turn around to protest the very qualities that, presumably, attracted them in the first place. Although I think PROD is selfish and absurd, it's somehow reassuring to know that contrariness can still flourish in a model community. Krier, as usual, gets it right. When you do a new development, he says, "You must build the noxious uses first or the residents will prevent them."

They love to talk about architecture in England. George Ferguson, the current president of the Royal Institute of British Architects, has proposed an X rating for works of architecture. He hasn't explained the details, but the idea is that really terrible buildings would be given the X in the hope that, labeled with such a stigma, they might be demolished. Perhaps the govern-



Sponsored by Prince Charles, Poundbury follows New Urbanist planning rules.

Contributing editor Robert Campbell, FAIA, is the Pulitzer Prize–winning architecture critic of The Boston Globe.

ment could subsidize the demolition, or perhaps it could refuse needed permissions or benefits. One delights in imagining the star-chamber gathering of taste police who would meet to award the X listing. Alas, it probably won't happen.

The hottest argument at the moment is over a government policy that says, or seems to say—the wording is the usual bureaucratic fog—that traditional styles of architecture are now banned in the British countryside. The law formerly banned any large new house in open countryside, since the government policy, as noted above, is to keep development in towns. But it was modified—with backstage pressure, everyone thinks but can't prove, from Norman Foster—to permit houses that are "truly outstanding and groundbreaking" and reflect "the highest standards in contemporary architecture."

Architects who practice in traditional modes believe this is a deliberate prohibition of historic styles, and they're up in arms, as are Americans like Andres Duany. A member of Prince Charles's staff suggested to me that if you were to ban architecture that imitates the architecture of some previous era, you'd have to demolish half of London. Gothic Revival? Palladian? Even a landmark like Tower Bridge is merely thick clothes of traditional stone over a modern steel frame.

Speaking of Foster, his office courteously arranged a private tour of the master's new office tower in the financial district of London, the so-called Gherkin. (Taciturn Americans lack the gift for nicknames that come so easily in the more verbal culture of the Brits.) A gherkin is a pickled cucumber, and Foster's tower does indeed look like a pickle or a fat cigar standing on end [RECORD, May 2004, page 218]. I loved and hated it. From an urban point of view, it's remarkably unsocial. It wraps itself haughtily in its glass cloak, like an operatic diva, ignoring everything around it. The architecture tells you this is a generic building that could be sited anywhere. It offers nothing to the life of the street. The ground floor, which is tiny, as befits the end of a gherkin, contains only an elevator lobby.

A vertical cul-de-sac

Upstairs, though, if you're privileged to go there (the whole building is occupied by a single Swiss insurance company), the place is remarkable. Glass atriums spiral up the exterior, offering fresh air to every occupant. At the top are a restaurant and bar with spectacular views over the city, at least until the next tower blocks them. In a talk at Poundbury, the ever-quotable Krier fulminated about skyscrapers. They are, he said, "network disrupters" and "catastrophic social isolaters." A skyscraper is a "vertical cul-de-sac"—cul-de-sac being, probably, the most vicious insult a New Urbanist can utter. And indeed, the Gherkin functions more like an elitist club than a connected piece of the city. But it's an elegant work of architecture. Four days after my visit, when the Gherkin opened briefly to the public, the queue went around the block. Television crews were present to record the event. It's hard to imagine that kind of interest in a work of commercial architecture in the U.S.

Incidentally, architectural techies should check out the window-washing system at the Gherkin. Cleaning a building of this shape is a challenge, to say the least. Foster and consultants had to invent an elaborate crane and boom that climbs around the exterior like a giant spider. Let's hope it works. As every architect knows, in architecture you don't get to build, test, and improve a prototype before going on to the production model. You have to get it right the first time. ■

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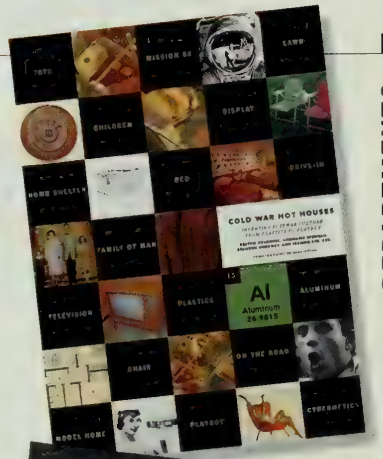
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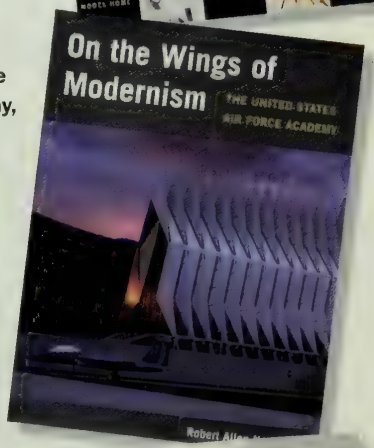
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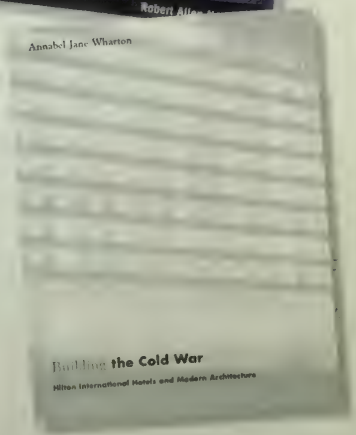
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Coming in from the cold: How politics and architecture mixed in the postwar era

Books







Cold War Hothouses: Inventing Postwar Culture from Cockpit to Playboy, *edited by Beatriz Colomina, Annemarie Brennan, and Jeannie Kim. New York: Princeton Architectural Press, 2004, 287 pages, $28.*

When World War II ended and corporations that had been making armaments retooled, the result was Barbie dolls and Tupperware, according to *Cold War Hothouses.* The overreaching, sometimes glib premise of the book is that the new focus was entirely domestic: bomb-shelters, window air-conditioners, kitchen appliances, garden products, and drive-in theaters—which rolled living room, bedroom, and kitchen into one. Even newly opened national parks, writes Jeannie Kim, were extensions of domestic space. The parks were meant for viewing from a car, a home on wheels, and typically they had flat-roofed visitors centers with open plans that resembled those of postwar suburban houses.

Many cold war consumer products had military origins. The aluminum house was a transformation of the soldier's demountable, temporary home, the Quonset hut. Kites, used during the war as part of rescue kits and for target practice, were the inspiration of playful houses by Ray and Charles Eames. The logic of the cockpit became the logic of the office cubicle. The postwar years shifted emphasis from the public realm to the private or domestic, write the authors, but the era also changed private into public: Rooms became open spaces with moving partitions, and Hugh Heffner's 1950s version of erotica eventually made its way into bedrooms across America via television.

Sometimes the authors go overboard in developing their single-track thesis. Beatriz Colomina, for instance, writes that "public space could only be sold by offering it as a form of domestic privacy not so different from that experienced in the suburbs." Roy Kozlovsky domesticates even the Beat poet Jack Kerouac, describing the car Kerouac drove cross-country four times as both "a domestic machine for the heterosexual family" and a machine that Kerouac used to shirk domestic responsibilities. Kerouac wrote *On the Road* on a long scroll of drafting paper to mimic the continuous road trip experience.

Cold War Hothouses was developed from seminars and workshops about postwar America held at Princeton's School of Architecture between 2000 and 2002. The material is organized into very readable chapters with such titles as "Cockpit," "Forecast," "Plastic," "Playroom," "Toy," and "Pornotopia." They show how wartime industries also adapted the tools of military forecasting to commerce and advertising.

The book has a wealth of intriguing ideas, some of which seem hyperbolic, as when Colomina elevates the suburban home to a bulwark against Communism and the suburban housewife to an air-traffic commander overseeing her troops from the kitchen of an open-plan house. When she writes about flexible residences made of lightweight parts as "engineered for rapid deployment," she seems to forget that European architects were experimenting with flexible open plans well before World War II.

So read *Cold War Hothouses* judiciously and with a gimlet eye, but read it. The book brings freshness and new interest to the cold war era.

Andrea Oppenheimer Dean

On the Wings of Modernism: The United States Air Force Academy, *by Robert Allen Nauman. Champaign: University of Illinois Press, 2004, 173 pages, $45.*

Robert Allen Nauman reminds us in this study of the genesis, design, and construction of the United States Air Force Academy, that the academy was as much about politics and cold war culture as about architecture, and therein lies the book's great value.

When President Dwight Eisenhower established the Air Force Academy 50 years ago, the best site for the "West Point of the Air" was in Wisconsin. Ike, however, did not want to award Senator Joseph McCarthy such a plum. The First Lady was from Colorado, so it seemed a good idea to place the new campus in the Rockies and thereby spread more federal largesse across the West.

Skidmore, Owings & Merrill's quest for the commission required considerable organizational and

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diplomatic skills, including martini lunches with congressmen, the clever use of Ansel Adams photographs, and a lot of showmanship. More than 300 design firms applied for the job, but only a few had as many useful connections with those in power.

Frank Lloyd Wright told Congress that the architects at SOM were "commercial artists," designers of "a factory for birdmen." (The American Legion's threat to "reveal his past antimilitaristic activities and associations with Russia" had removed Wright from consideration, Nauman writes.)

But winning the commission was only the beginning of a baroque bureaucratic nightmare for SOM. For starters, Senator John Stennis of Mississippi decried the design as "modernistic and futuristic ... New York City architecture." Representative John Fogarty, former president of the Rhode Island Bricklayers Union, attacked the extensive use of glass, unable "to find any trace of American heritage in the cold, impersonal, and mechanical appearance of these buildings."

On the Wings of Modernism is well-written, exhaustively researched, and thoroughly enjoyable. Woven among the political shenanigans is a terrific look at Eisenhower-era Modernism and a lot of interesting detail. Although the university-press packaging is disappointingly dowdy, Nauman's analysis makes it impossible for historians to dismiss "Alcoa U." as just another corporate campus. *William Morgan*

Building the Cold War: Hilton International Hotels and Modern Architecture, *by Annabel Jane Wharton. Chicago Press: University of Chicago, 2004, 272 pages, $28.*

In 1963, American hotelier Conrad Hilton declared the just-opened Berlin Hilton "a new weapon with which to fight Communism." The ungainly building, designed by Pereira & Luckman and insensitively dropped into the city's heart, would "develop a better understanding of the role played by West Berlin in furthering the hopes and objectives of the Free World," promised the hotel magnate.

Berlin is just one of several case histories in Annabel Wharton's *Building the Cold War*. A Duke University Byzantinist, Wharton was sparked to write this treatise on American cultural imperialism by Hilton's domination of Istanbul. Financed by Turkish government monies (and designed by SOM as a slicked-up Unité d'Habitation), the Istanbul Hilton was both an anti-Soviet symbol and a dramatic setting from which American tourists and businessmen could admire the city without interacting with it.

Continuing the arrogant pattern of ham-fisted and intrusive buildings, Hilton constructed similar-looking hotels in such cradles of civilization as Cairo, Athens, and Jerusalem. Appalled by the massive Cavaglieri Hilton in Rome, Florentines blocked construction of a proposed Hilton overlooking the Arno.

The most egregiously anti-urban example was the London Hilton. The vulgar skyscraper by a little-known developer's architect was the first building in London taller than St. Paul's Cathedral, begun almost 300 years earlier. It signaled a rush to transform the London skyline into something approximating Houston's.

Wharton provides additional historical information on the rise and fall of Hilton and on American hotel architecture in general. While one wishes university presses could find a way to afford better reproductions and stronger designers, *Building the Cold War* is a welcome study of a dark chapter of Modernism. *W.M.*





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Bruce Mau looks at the big picture and highlights some surprising findings

Exhibitions

By James S. Russell, AIA

Massive Change: The Future of Global Design. *Curated by Bruce Mau. At the Vancouver Art Gallery, Vancouver, B.C., through January 3, 2005.*

You can tell from the title of this show that the ambitions of Bruce Mau's latest enterprise are not small. Certainly, the notion that an exhibition can make understandable trends of mind-boggling complexity is a worthy one. This exhibition actually has higher aspirations: to show how design will manage massive change.

The design impresario behind *Zone* magazine, a collaborator with Frank Gehry on the graphics of the Disney Hall, and—most famously—coauthor with Rem Koolhaas of the doorstop-size *S, M, L, XL*, the 44-year-old Mau has rapidly become a design star. To make the exhibition's audacious case, the Vancouver Art Gallery, the city's chief art museum, has helped underwrite far more than an exhibition: It's a Mau-directed enterprise that includes a book (published by Phaidon Press), an ever-evolving Web site, radio programs, and an Institute Without Boundaries that puts students of the Toronto City College to work—in Mau's office.

Design exhibitions typically parade a series of objects, each one expressing its utility and revealing the intelligence behind its creation (think iPod). Mau rightly sees this approach as limiting the role design can play. Instead, he presents, for example, a quite ordinary and inexpressive device about the size of a barbeque, lovingly mounted on a plinth. It turns out to be a kind of miracle of design, however, since it is capable of turning polluted water into drinking water for an entire third-world village.

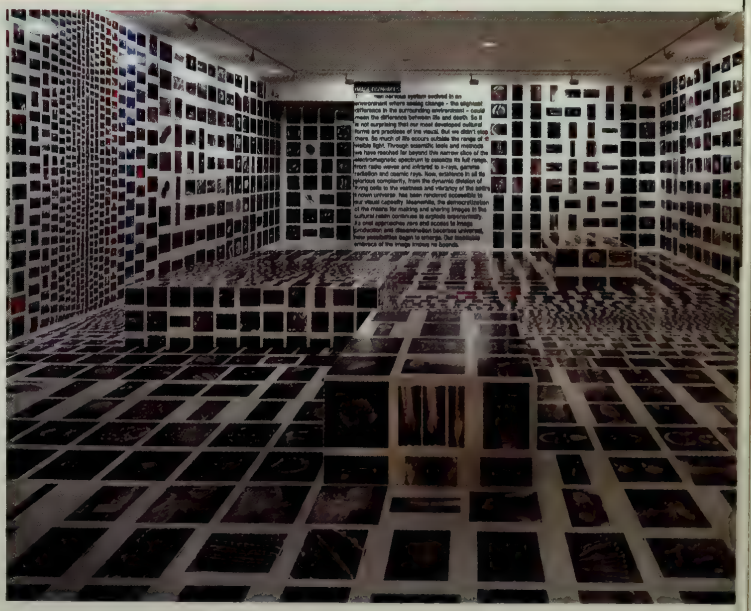
Massive Change eschews what the gallery's senior curator, Bruce Grenville, aptly calls "the elegant remove" of typical high-design displays. The presentation is almost self-consciously undesigny. A small room documenting the evolution of a variety of computer-input devices, for example, puts a premium on prosaic engineering breakthroughs rather than the usual aestheticizing of function. The most elegant objects in the show are computer-generated replacement body parts.

At its best, the exhibition vastly expands conventional notions of the value of design. But the show swings wildly from moments of insight to collegiate earnestness. Among the biggest disappointments is the Urban Economies section (one of 11 big themes). A wide-screen film introduces the vast problems of world cities, then parades a familiar mix of idealist projects (Jaime Lerner's innovative transit solutions for Curitiba, Brazil; Chicago mayor Richard Daley's green-roof program; the work of William McDonough with Ford, among others). Worthy as this work is, it does not connect to the vastness of the problems portrayed. And it will all seem quite familiar to those who care about urban futures.

As Koolhaas tends to do, Mau draws broad implications from startling factoids. One that seems especially compelling, however, is the idea of each person's "ecological footprint," as formulated by E.O. Wilson, a biologist and Pulitzer Prize–winning author. For everyone to have as large a footprint as Americans have would demand three more planet earths, he claims. That's succinct. It suggests we can do something, not simply allow ourselves to remain passive bystanders to "massive change." Oddly, Mau doesn't map or otherwise give visual form to the human ecological footprint, which would have hugely aided Wilson's striking analysis.

The exhibition often does make compelling use of the graphic presentation of information—to powerfully summarize





A Wealth and Politics gallery (left) looks at the global distribution of resources; another gallery examines images (below).

data and make important comparisons. It is a use of design popularized by Edward R. Tufte in his classic book, *The Visual Display of Quantitative Information*.

A gallery devoted to global systems offers wondrous examples of the way visualization technology helps make understandable our world of data overload and mind-boggling complexity. Patterns of global air travel are displayed, for example. With thick, pulsing trunk lines between the wealthiest metropolitan areas and vast empty gaps (especially in Africa), it's a lesson in worldwide economic difference that can be comprehended in a second.



The Military gallery (above) presents technologies first developed for military uses.

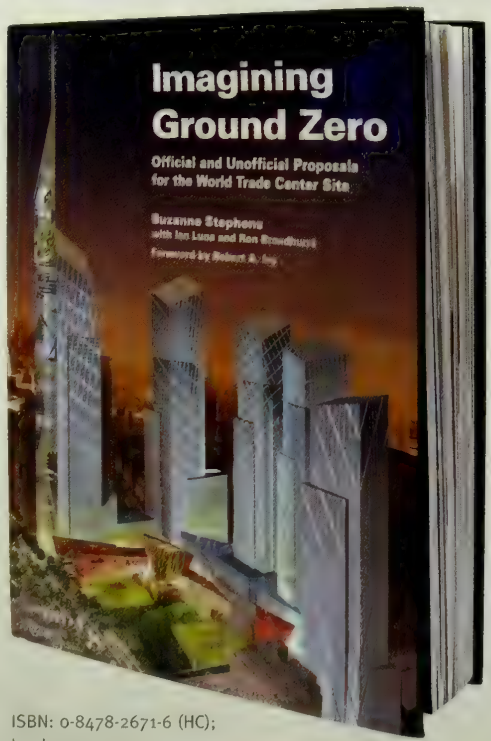
A few other similarly powerful images are on view. The first photo of earth shot from space reminds us that it singlehandedly changed the world's conception of itself. Images of the ominously expanding hole in the polar ozone layer helped change global behavior.

Two other galleries make good on the wild ambition of the exhibition's premise. One focuses on alternative forms of energy, including an unprepossessing $3 stove capable of transforming the lives of perhaps a billion of the world's poorest people because it burns firewood many times more efficiently than an ordinary stove. Arguments for the power of design could not be more "elegant."

You don't think of design when you consider the medium-security-prison look of the average Wal-Mart store. But a provocative vignette in the Market Economies section tells how Wal-Mart's system of purchasing and managing inventory is a product of the most obsessive and intricate design thinking. Another kiosk suggests how property ownership can be "redesigned" to help poor people build wealth. Design is now a chief endeavor of business, not a subset, said Mau in a recent interview.

In too many galleries, though, a firm curatorial hand seems lacking. A row of objects made from recycled materials sits in front of an artlessly constructed wall of garbage. A room devoted to new kinds of materials looks like a half-finished student project. As the exhibition strays farther from what design does best, it devolves into an earnest Epcotlike catalog of the manifest ways innovation makes our lives better.

For all its flaws, the show demonstrates Mau's willingness to cast off the distanced, ironic cool that has too long relegated design culture to boutique status. I'm happy to see Mau as an unabashed idealist. The exhibition and its related enterprises are supposed to evolve as they make their way to the Art Gallery of Ontario in Toronto, the Museum of Contemporary Art in Chicago, two cities each in Europe and Asia, and a possible final stop in New York over the next three years. With a more critical eye, *Massive Change* could be changed considerably for the better. ■



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The comprehensive roundup of the inspiring visions for the World Trade Center Site

September 11, 2001 changed the public perception of architecture and urban design. Published jointly by Architectural Record and Rizzoli, Imagining Ground Zero: Official and Unofficial Proposals for the World Trade Center Site documents not only the master plan competition for lower Manhattan, won by Studio Daniel Libeskind and sponsored by the Lower Manhattan Development Corporation, but also proposals submitted by invitation of and published by *New York* magazine and *The New York Times Magazine*, as well as proposals from the exhibition at Max Protetch Gallery. Also included is a selection from the more than 5,000 schemes submitted to the competition for the World Trade Center Memorial.

This remarkable and authoritative survey features in depth the official scheme for the site, designed by David Childs of Skidmore, Owings & Merrill with the collaboration of Daniel Libeskind of Studio Daniel Libeskind; Reflecting Absence, the winning scheme for the memorial, designed by Michael Arad and Peter Walker; and the World Trade Center Transportation Hub, designed by Santiago Calatrava, DMJM + Harris, and STV Group.

With its exhaustive approach to these myriad voices in the discourse surrounding the World Trade Center site, Imagining Ground Zero is destined to become the canonical reference for this unprecedented moment in world architecture.

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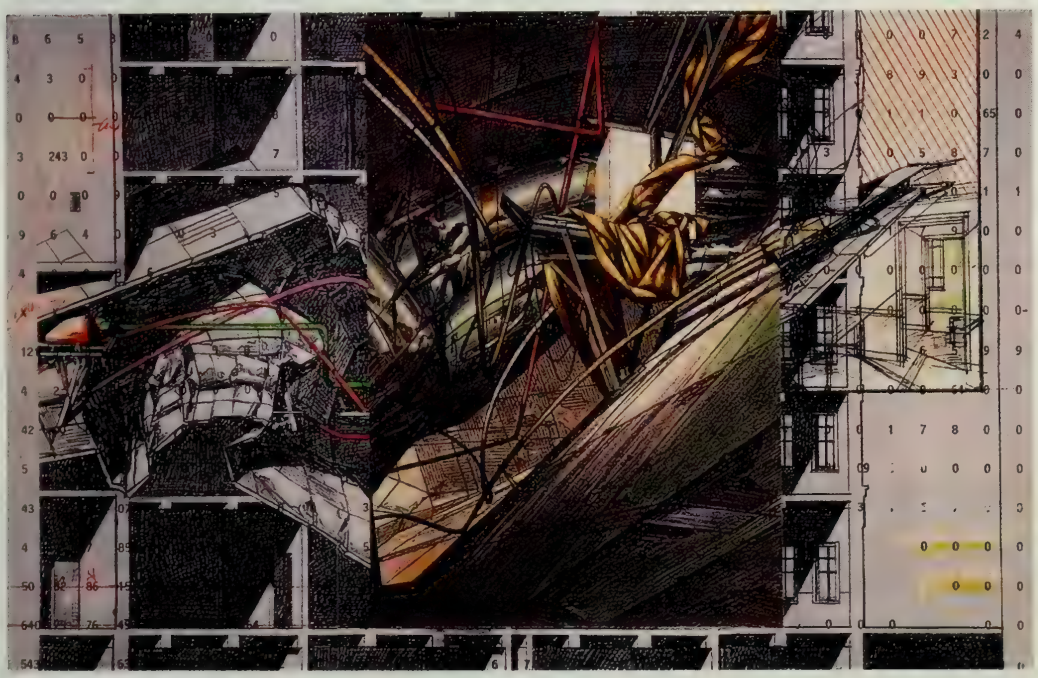
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Beyond the line: Understanding the third dimension in the work of a master draftsman

Exhibitions

By Joseph Giovannini

Lebbeus Woods: Experimental Architecture. *Curated by Tracy Myers. At the Heinz Architectural Center at Carnegie Museum of Art, Pittsburgh, through January 16, 2005.*



In 2D: One of the drawings in the *Berlin Free Zone* series (above). In 3D: A model of a project for Zagreb, Croatia (below).



For over a generation, Lebbeus Woods's graphic ruminations—emotive, powerful, cryptic—have haunted the collective imagination of the architectural profession. Woods, who last practiced decades ago, left his day job to invent, on paper, oneiric worlds that make us wonder. His drawings open a space of thought in our eyes.

But the virtuosity of the drawings (in the *Aerial Paris* series of 1989, for example, he draws thin air so convincingly we can almost inhale it) prompts us to separate the draftsmanship from the vision, the dancer from the dance. However, to focus on the draftsmanship—the shadings, mood, evocation, and depth of space—is to relegate the architect to the status of a beauty trained to be blonde: all talent, little brain.

Tracy Myers, a curator at the Heinz Architectural Center, has mounted the largest American exhibition yet on Woods, and it performs the critical service of dwelling on the ideas in the work rather than letting technique and beauty define the accomplishment. Many of the displays are models in which Woods removes the draftsman's beguiling hand from the equation. Like Malevich's *Architektons*, the maquettes embody in three dimensions ideas developed in two. Without the graphic seduction, the ideas remain powerful and perhaps more persuasive because, even in miniature, they occupy real space.

A series of tower models, their prismatic volumes broken into fractal eruptions, are easily as compelling as any of the towers proposed by other architects for Ground Zero.

Woods is often called a visionary, but he does not speculate in an ivory tower. Despite the meditative quality of drawings worthy of a monk, Woods is an activist; there is a narrative in the abstract beauty of his vision, and it reveals an existentialist's engagement with the world. The drawings emerge, finally, as heuristic provocations, meant to ask questions, stimulate dialogue, and confront hard realities.

Once an illustrator of an imaginary mechanical future in the Jules Vernes tradition, Woods turned a corner in 1987 when, during a trip to São Paulo, the favelas politicized him. The squatters' settlements motivated him to use architecture as a corrective agent and social critique. Architects, he felt, were obligated to peer directly into the crisis and propose solutions. Woods embarked on a form of intellectual activism through drawing.

In a frieze ringing one of the galleries, he imagines large environmental capsules parachuted into Berlin's traditional city fabric after

Joseph Giovannini is an architect based in New York and L.A. and the architecture critic for New York *magazine.*

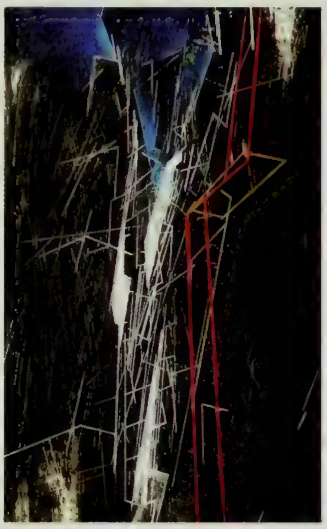
the Wall came down, opening the capital to a new order of habitation.

At risk to his own life, he visited Sarajevo during the Serbian bombardments in the 1990s and responded to the destruction by proposing a process of architectural healing. We see partially restored buildings grafted with Woods's quasi-organic, quasi-mechanical fuselages, conceived as regenerative urban tissue. His proposal does not erase the destruction with new construction, nor does it fully restore the building to a prewar state, as though nothing happened. His grafts acknowledge the war, absorbing its consequences in a wheel of ongoing construction. War is embraced as part of life's cycle. The vision is realistic, optimistic, and wise.

Scored with mysterious scribblings, the drawings at times recall Leonardo's notebooks, but they are topical and relevant. Their freshness comes, in part, from research Woods has carried out by isolating architectural subjects, as a scientist would in a controlled experiment. An experimental theorist, he explores with his pencil what buildings would be like in, for example, an antigravitational state or the flux of an earthquake. He distills discoveries in speculative drawings but applies results in crisis situations.

Inviting interpretation

The sum of the speculations yields an architectural approach that challenges the Euclidean world of controlling geometries that fix space, in favor of fluid forms and spaces whose ambiguities invite interpretation. The "high houses" that he draws floating over Zagreb don't have rooms programmed specifically for sleeping or eating, but are open, multilevel, multidimensional lofts: "free spaces" that invite occupants to project their own use.



Woods envisions a tower always under construction at Ground Zero.

Architecture is one of the slower arts, and the virtue of drawing theory rather than construction documents is that Woods moves through issues faster than an architect slowed by a building process. Still, architecture is a spatial discipline, and in this show Woods brings the ideas off the walls into real space. *The Tangle*, a site installation made of bent aluminum rods, luminescent in a pitch-black gallery, is a line drawing in three dimensions whose dense complexity allows only visual penetration and mental entry. The straight, axial corridor leading to the exhibition is challenged by Woods's leaning, floor-to-ceiling panels, covered with enlargements of his drawings. The panels and their graphics transform the corridor into a stroll through uncertainty, a perfect introduction to the work. The enlargements project us into the details of geometries recalling those in El Lissitzky's work and push us to occupy elusive and illusory spaces whose ambiguities can be interpreted in multiple ways.

This is an important show by one of architecture's most probing and original figures, and it is long overdue. It demonstrates that you can't separate Woods's drawing from the vision. The two are simultaneously and mutually causal. ■

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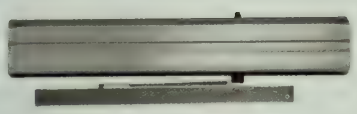
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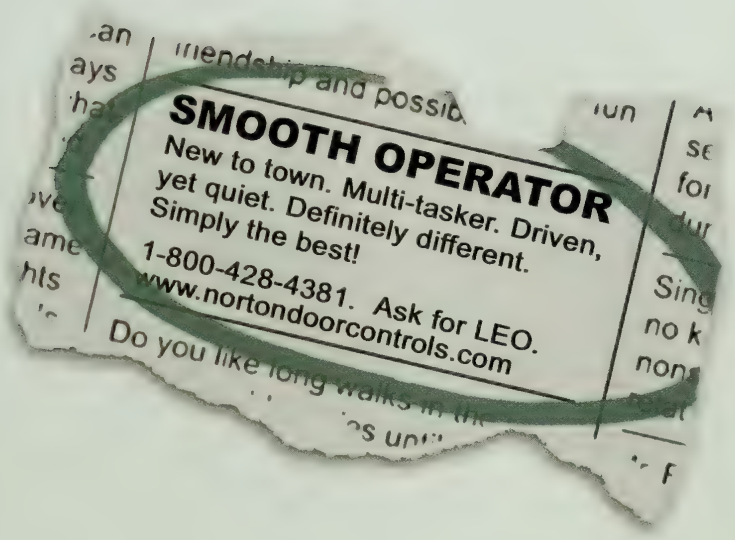
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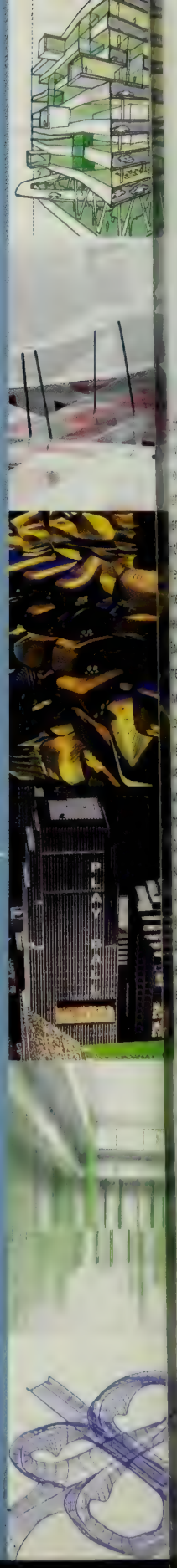
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On the Road to Venice: 9th Architecture Biennale

Exhibitions

By Robert Ivy, FAIA

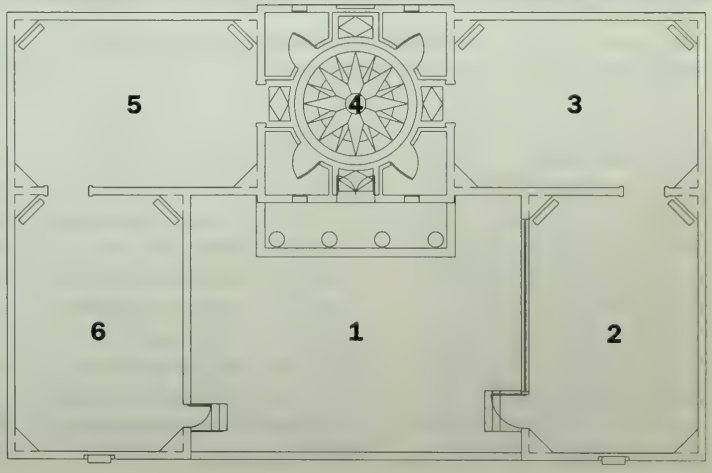
To the list of creative folk captivated by Venice, Italy—from Tintoretto to Thomas Mann—add the modest staff of ARCHITECTURAL RECORD. We were drawn there, not as artists, but in the unusual role of curators for the U.S. Pavilion at the 9th International Architecture Biennale held there. Invited by the Bureau of Educational and Cultural Affairs of the U.S. Department of State, we oversaw an architectural show that opened September 12 and is closing on November 7. The location was sublime: The U.S. Pavilion, which the State Department leases from the Peggy Guggenheim Collection in Venice, is one of 33 such pavilions in the Giardini di Castello, a serendipitous public garden accustomed to alternating annual presentations of cutting-edge art and architecture. Nearby, a massive exhibition of international architecture filled the cavernous 16th-century Corderie of the Arsenale, a former shipbuilding yard.

Who could turn down the opportunity? We had gotten hooked on the Biennale before in a more indirect manner: In 2002, I had been named the U.S. Commissioner for *The World Trade Center: Past, Present, and Future*, a two-part exhibition, with one part mounted by Max Protetch (for which RECORD had been an adviser), and the other comprising photographs by Joel Meyerowitz. This time, I would again be the U.S. Commissioner for the pavilion, but RECORD would put on the show.

In accordance with the overall theme of this year's Biennale,



The Palladian-style U.S. Pavilion in the Giardini di Castello was designed by Delano and Aldrich in 1930.



1. *Lewis.Tsurumaki.Lewis: Parking Garage*
2. *Reiser + Umemoto: Highway Interchange*
3. *Predock_Frane: Spiritual Space*
4. *Studio/Gang: Sports Stadium*
5. *Kolatan/MacDonald: Apartment Tower*
6. *George Yu: Shopping Center*

organized by Kurt Forster (page 110) and entitled *Metamorph*, we decided to explore the transformations taking place in typically American building types. Call them mundane, call them ubiquitous—they fill our world, and they deserve fresh thinking. Then we selected six young, innovative architects, who had been researching particular programmatic expressions, and who had appeared in our December Design Vanguard issues in the previous five years. We asked them to join in, and all immediately said yes. We then matched them up with ordinary, iconic building types where their research could inform future design: The shopping center went to the Los Angeles–based firm, George Yu Architects; the parking garage to the New York firm of Lewis.Tsurumaki.Lewis; the highway interchange to Reiser + Umemoto; the skyscraper (in its specifically residential form) to Kolatan/MacDonald Studio in New York; the sports stadium to Studio/Gang of Chicago; and the spiritual or contemplative space to Predock_Frane of Los Angeles.

In addition, we asked the teams to design and install their own rooms (or, in the case of Lewis.Tsurumaki.Lewis, the courtyard) at the U.S. Pavilion, and to be ambitious in their presentations (even if we did not have the funds to back up that desire). We did not want to create a routine exhibition, like a walk-in book, with only drawings and photographs on the wall, supplemented with architectural models nearby. Instead, we sought an interior sense, the experience of being inside architecture. Each team proposed a radically refreshing and unexpected solution to its assignment. Yet a concern for a connection to the social fabric and to the landscape consistently showed up in each of the schemes. Whether the topic was a shopping center or parking garage, the architects thought in a larger, more holistic manner than the simple assertion of a formal solution. In these schemes, type relates to more than construction: It proposes that human life is multidimensional and that physical solutions can reflect that diversity of expression.

Next, RECORD's editorial-team-turned-curators, led by Cliff Pearson and Suzanne Stephens, began working with the six architectural firms on the conceptual development of their schemes, as well as the arduous task of fund-raising. We were fortunate in having Laura Viscusi, RECORD's associate publisher, and Bill Hague, account manager for McGraw-Hill Construction, onboard to convince corporate sponsors that this was a worthwhile cause. Meanwhile, Pearson and Stephens, aided by the Architectural League of New York, persuaded leading established architectural firms in this country to "adopt an architect" by giving them serious money for their installations. Through the efforts of several of the young architects, certain private donors gave, as well. In fact, a couple people just called up and offered to contribute!

The planning of the installation and logistics of shipping to Venice (think canal delivery) was arduous: There was no time to fabricate the work in Italy, owing to the country's practice of taking summer vacation in August. But we were saved by the pro bono efforts of the multidimensional Christian Bruun. Trained as an architect, Bruun acted officially as our curatorial consultant. In this capacity he advised both RECORD and the architects while coordinating the myriad logistical details with the special projects manager for the Peggy Guggenheim Collection in Venice, Chiara Barbieri. Bruun's extensive knowledge of digital techniques, exhibition fabrication, and his present work directing and producing feature films in New York and Los Angeles added an indispensable level of expertise to the visual realization of *Transcending Type*.





At the opening of *Transcending Type* at the U.S. Pavilion on September 10, Robert Ivy (middle, at left) talked with the Guggenheim's Thomas Krens (far left), and the State Department's Patricia Harrison. George Yu shows Daniel Libeskind his project (above).

Despite last-minute panic attacks, we got it done. We first celebrated with an evening bash on September 9 at the Peggy Guggenheim museum, where we publicly thanked Phil Bernstein, the vice president of building solutions for our lead sponsor, Autodesk, which provided major monetary support as well as the software for the young architects. But the pavilion crystallized into a unified whole at the press conference and the formal opening on September 10. On that balmy afternoon, attended by a robust press corps, the U.S. Undersecretary for Public Policy, Patricia Harrison, declared the pavilion open. We sighed collectively (especially the State Department's Brian Sexton, who, as Senior Adviser/Special Coordinator for Culture, had collaborated closely with us). Thomas Krens, director of the Guggenheim Foundation, spoke, as did the director of the Peggy Guggenheim Collection, Venice, Philip Rylands. After another reception laced with Montenidoli wine, architect Daniel

PHOTOGRAPHY: ELLIOTT KAUFMAN/THIS PAGE; ROBERTO CONTRERAS/OPPOSITE



As the architects in charge of the Biennale's exhibition design, Hani Rashid and Lise Anne Couture of Asymptote created a large sculptural bench in front of the Italian Pavilion in the Giardini di Castello.

Libeskind, the first U.S. Cultural Ambassador for Architecture, joined me in a public interview. Then he genially took the press on a tour of the U.S. Pavilion, enthusiastically discoursing on the next generation's projects.

All in all, the collective efforts worked. Today, we intend to bring *Transcending Type* to the United States and are actively engaged in discussions with several exhibition venues. The show is worth it, as it illustrates architecture's transformative power, whether reached through tectonics, scientific exploration, or sheer imagination. Despite numerous precautionary studies in a wide range of disciplines, society continues to cannibalize the environment at a rapid pace, with architectural projects frequently guided only by imperatives of economic return and simplicity of execution. Too often they fail to respond to the complexities and nuances of the real world. The exhibition *Transcending Type* at the U.S. Pavilion suggests an alternative. Venice, blissfully, continues to nurture the soul. ■

Exhibition presenters: ARCHITECTURAL RECORD *and the Bureau of Educational and Cultural Affairs of the U.S. Department of State (with Brian Sexton, Special Coordinator for Culture); in cooperation with the Peggy Guggenheim Collection (Chiara Barbieri, Special Projects Manager) and the U.S. Embassy Rome*
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Lewis.Tsurumaki. Lewis Parking Garage

In response to the ubiquitous problem of parking cars in the America, Lewis.Tsurumaki.Lewis (LTL) has been researching solutions to the design of parking structures for several years. For the exhibition *Transcending Type* at the U.S. Pavilion, the architects installed four large banners on aluminum frames in the courtyard, attached at one end to the Classical columns of the pavilion's entrance porch. These vinyl billboards, each printed on two sides (except one side that was encrusted with packets of Car-Freshner) depict visual analyses of existing parking problems (and pleasures) on one side, with the architects' proposed solutions on the other. The firm's three proposals transforming the parking garage building type combines parking with retail, commercial, and residential components. One conceives a drive-up skyscraper, called *Park Tower*, where a double-helical roadway weaves parking surface with retail, office, and residential uses. Another parking scheme, *New Suburbanism*, intersects parking structures with athletic fields, and overlaps suburban houses with big-box stores. Another, *TourBus Hotel*, combines parking and hotel for ease of roadway tourism.

Lewis.Tsurumaki.Lewis is a New York–based firm founded in 1993 by Paul Lewis, AIA, Marc Tsurumaki, and David J. Lewis. Featured in the 2000 National Design Triennial at Cooper-Hewitt, National Design Museum in New York City; the New York Architectural League's *Emerging Voices*, in 2002; and Design Vanguard 2000 [RECORD, December 2000, page 116], LTL recently completed three restaurants in New York. Paul Lewis is the director of graduate studies at Princeton's School of Architecture; Marc Tsurumaki teaches at Columbia University and at Parsons; and David J. Lewis is the director of the M.Arch. program at Parsons.



Architects: *Lewis.Tsurumaki.Lewis—Paul Lewis, AIA, Marc Tsurumaki, David J. Lewis, principals*
Installation team: *Alan Smart, James Bennett, Hilary Zaic, Maya Galbis, Alex Terzich, Mimi Shin*
***Park Tower* team:** *Alex Terzich, Michael Tyre, Israel Kandarian, Hye-Young Chung, Hilary Zaic, Maya Galbis*
***New Suburbanism* team:** *Michael Tyre, Jason Tang*
***TourBus Hotel* team:** *Hye-Young Chung, Jake Nishimura, Ade Herkarisma, David Takacs, Eric Samuels, Jamie Montgomery, Larry Cohn (supported in part by Mercedes T. Bass Rome Prize in Architecture, the American Academy in Rome)*
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Project sponsor: *Car-Freshner Corporation/Tavola/Wunder-Baum*
Software: *Autodesk*





In the courtyard of the U.S. Pavilion, architects Lewis.Tsurumaki.Lewis installed four double-sided billboard elements (opposite, bottom), which were fastened at one end to the columns of the pavilion's Classical-style portico. Analyses of contemporary parking situations were displayed on one side of the vinyl-printed screens (opposite, top), while solutions devised by the firm were printed on the backs (below). A fourth side (left) was enlivened by a wall of Car-Freshner packets.



Reiser + Umemoto
Highway Interchange

Reiser + Umemoto has been investigating modes of transit for several years, including vertical airports in RECORD's Millennium issue [December 1999, page 118]. For *Transcending Types*, the firm concentrated on the generic highway interchange and how it could engage the space between the road and adjacent territories. The architects' proposals are graduated in scale from the footbridge to a regional infrastructure. In the pavilion, a 33-foot-long suspended plywood model of a bridge dominated one room. (For details on its fabrication, see page 106.) The highway interchange proposed would be developed to incorporate residential development, pedestrian circulation, and landscaping, usually lacking in infrastructural projects.

This project extends the research the firm is undertaking with Arup for its Alishan Tourist Route in Taiwan, which will include a glue-laminated timber-boardwalk-like structure, along with other facilities, to be built in 2005.

Jesse Reiser, AIA, and Nanako Umemoto have practiced in New York as Reiser + Umemoto RUR since 1986. Their work covers a range of scales, from furniture to infrastructure. Reiser teaches at Princeton University and Umemoto at the University of Pennsylvania.

Architects: *Reiser + Umemoto—Jesse Reiser, AIA, Nanako Umemoto, principals*
Bridge team: *Jason Scroggin, Eva Perez de Vega Steele, Michael Young*
Film *Ecstatic Planning*: *Mitsuhisa Matsunaga, Jonathan Solomon, Sean Daly (narration)*
Structural engineer: *Arup & Partners, London (Charles Walker, Annie Chung, Florian Gauss)*
Fabrication of bridge: *Cowley Structural Timberwork*
Bridge sponsor: *Craig Robins/Dacra Development*
Software: *Autodesk*







Stretching across the exhibition gallery in the U.S. Pavilion, Reiser + Umemoto's 33-foot-long bent-plywood model limns the basic form of a glue-laminated bridge/highway interchange. As the drawings and a film in the gallery further explain, the firm seeks to incorporate residential development, pedestrian circulation, and landscaping into an urbanistic infrastructure.

Predock_Frane
Spiritual Space

As its project for the *Transcending Type* exhibition, Predock_Frane addressed the design of the spiritual or contemplative space by literally creating an environment they called *Acqua Alta*.

The installation was conceived as a "pixelated" field of 5,000 nearly invisible nylon filaments to evoke the high-tide water patterns in Venice, and to refer as well to the complex patterns of piers that underpin the city. Hung from the ceiling and weighted with lead balls, the 17 miles of single-string filaments painstakingly hand-stained a blue-green color evoked the high-tide water as well as the horizon line where water meets air. The architects saw this interiorized landscape as analogous to the natural and evolutionary forces that shape this city. The luminous space, difficult to capture on film, attracted large numbers of visitors passing through it. Sometimes the close encounters caused the filaments to tangle, and visitors had to be restricted.

Established in Santa Monica, California, in 2000, Predock_Frane was featured in RECORD's Design Vanguard [December 2002, page 130]. Principal Hadrian Predock has already been getting the acclaim known to his father, Antoine. The firm recently won a national AIA Honor Award for the Center of Gravity Foundation Hall—a Zen Buddhist monastery in northern New Mexico. Current projects include the Central California Museum of History in Fresno, and a Kidspace inside the J. Paul Getty Museum in Los Angeles.

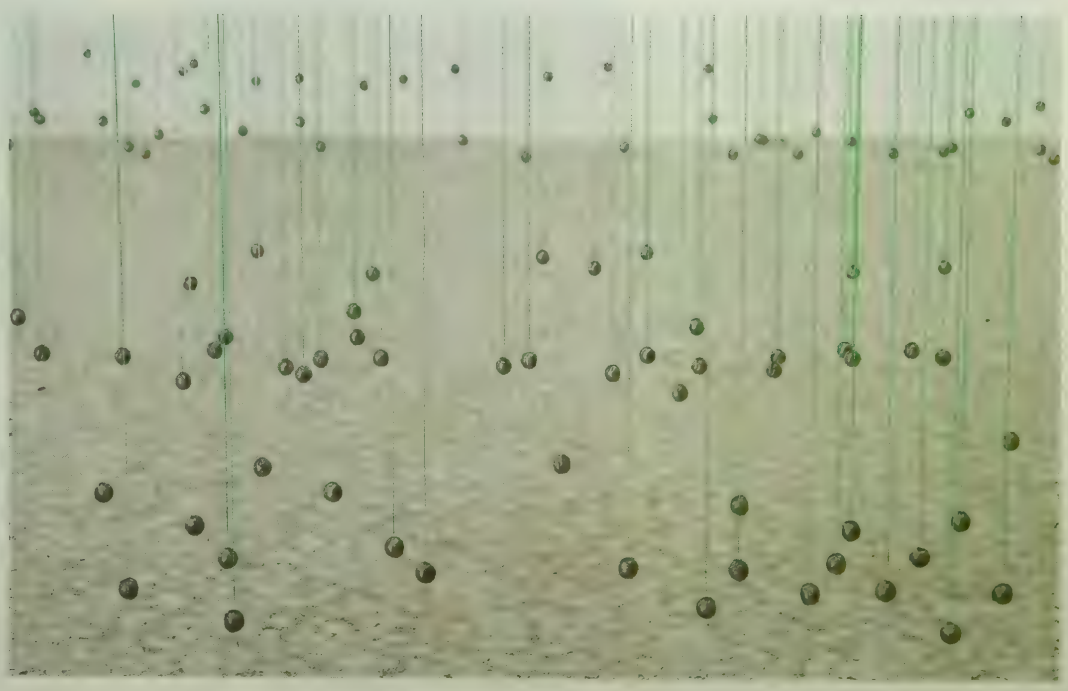
Architect: *Predock_Frane Architects—Hadrian Predock and John Frane, principals*
Project team: *Maximiliano Frixione, Elizabeth Grace, Morgan MacLean*
Software: *Autodesk*



PHOTOGRAPHY: ELLIOTT KAUFMAN (THIS PAGE AND OPPOSITE)



In order to conjure up a spiritual or contemplative space, Hadrian Predock and John Frane designed an actual room installation. Five thousand nylon filaments weighted by lead balls were hand-tinted shades of blue-green, referring to Venice's tidal waters. Hence the installation is entitled *Acqua Alta*.



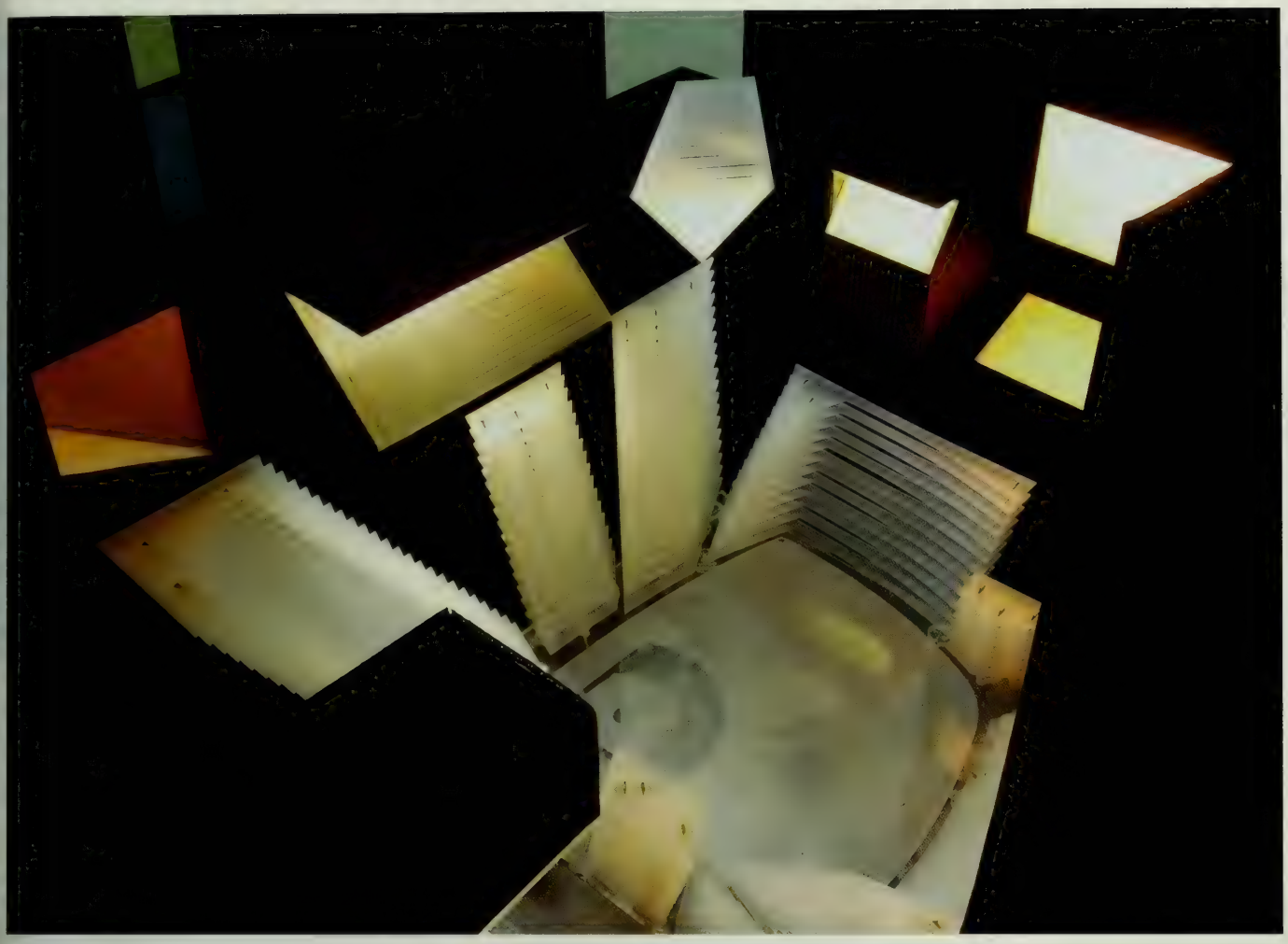
Studio/Gang
Sports Stadium

Studio/Gang, a Chicago-based firm, noticed that new sports stadiums on the outskirts of downtowns created huge traffic jams when the game was over, and then would lie fallow too much of the year. In this project for *Transcending Type*, Jeanne Gang, AIA, and her partner Mark Schendel, AIA, envisioned a baseball stadium where a folding and unfolding seating bowl would be inserted literally in the skyline among high-rise towers. With its rooftop playing field, this compact solution would take up no more space than a city block and would disappear when not in use. It would also take advantage of the times (nights, weekends) when downtown city multilevel garages are vacant, and elevators and stair towers in the empty office buildings could be used for circulation. To demonstrate the idea for the exhibition, Studio/Gang had a kinetically folding and unfolding acrylic model of a seating bowl fabricated, and surrounded it with waxed corrugated-board models of tall buildings.

Founded by Jeanne Gang in 1997, Studio/Gang/Architects recently completed the Starlight Theatre in Rockford, Illinois, and a "stone curtain" for the *Masonry Variations* exhibition at the National Building Museum. The firm was included in the Design Vanguard issue in 2001 [RECORD, December 2001, page 82]. Gang teaches at Harvard and IIT. Fellow principal Mark Schendel is visiting associate professor at IIT.

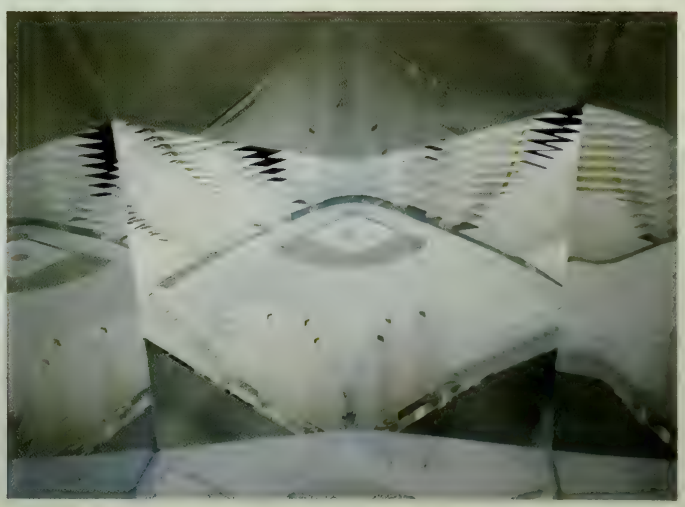
Architect: *Studio/Gang/Architects—Jeanne Gang, AIA, and Mark Schendel, AIA, principals*
Project team: *Hanes Wingate, Jay Hoffman, Thorsten Johann, Schuyler Smith, Juliane Wolf, Lynda Bartoli, Sebastian Severino Vitantonio, Rodia Valladares Sanchez, Victoria Gonzalez Exposito, Lindsey Phillips, Rich Tickner*
Project sponsor: *Leah Zell*
Software: *Autodesk*





Called *Baseball in the City* by Studio/Gang, the model of a sports stadium in the sky occupied the rotunda of the U.S. Pavilion (opposite). There, the kinetic lucite model (this page) of the seating bowl could be glimpsed among the models of skyscrapers.





Kolatan/MacDonald Studio
Apartment Tower

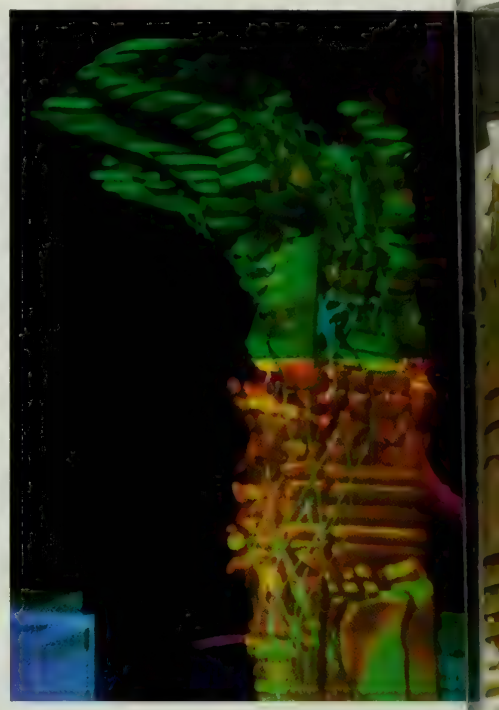
For its Millennium issue in 1999, RECORD asked Kolatan/MacDonald to design an apartment tower of the future [December 1999, page 88]. The result was *Resi-Rise*, a continuing preoccupation with the architects.

For the installation in the *Transcending Type* exhibition, Sulan Kolatan and William MacDonald emphasized the framework for the apartment building, displaying both a specially executed 8-foot-high model made of Corian's exterior cladding, and a double-skin, 30-inch-high prototype. In addition, a specially commissioned hologram, an existing 18-inch prototype, and a computerized animation gave visitors an idea how the frame could be inserted with living units, and customized. The architects foresee a structure made of fiber-reinforced-polymer composite components, into which are inserted plastic pods that undergo molecular restructuring with stress.

Kolatan and MacDonald formed its New York office in 1988. The firm has exhibited work at the Museum of Modern Art and the Centre Pompidou. MacDonald codirects core studios at Columbia University's architecture school, where Kolatan teaches.

Architect: *Kolatan/MacDonald Studio—Sulan Kolatan and William MacDonald, principals*
Design team: *S. Colombo, J. Baker, L. Malibran, Y. do Campo, G. Rojas, A. Burke, M. Huang, P. Wong, R. Harvey, M. Leung, J. Sanchez, B. Schenk, M. Komidou*
Film: *C. Bruun, E. Schuldenfrei*
Graphics: *N. Olmsted*
Sponsors/fabricators: *DuPont CORIAN; Evans and Paul; 3D Systems; Z Corporation Zebra Imaging; Kennedy Fabrications*
Software: *Autodesk*





In the *Resi-Rise* installation, the firm of Kolatan/MacDonald displayed an 8-foot-high model of Corian (below and opposite), demonstrating the structural framework; a hologram (top right); and a 30-inch-high prototype model (top left); plus a film to show how the living and working pods were assembled.

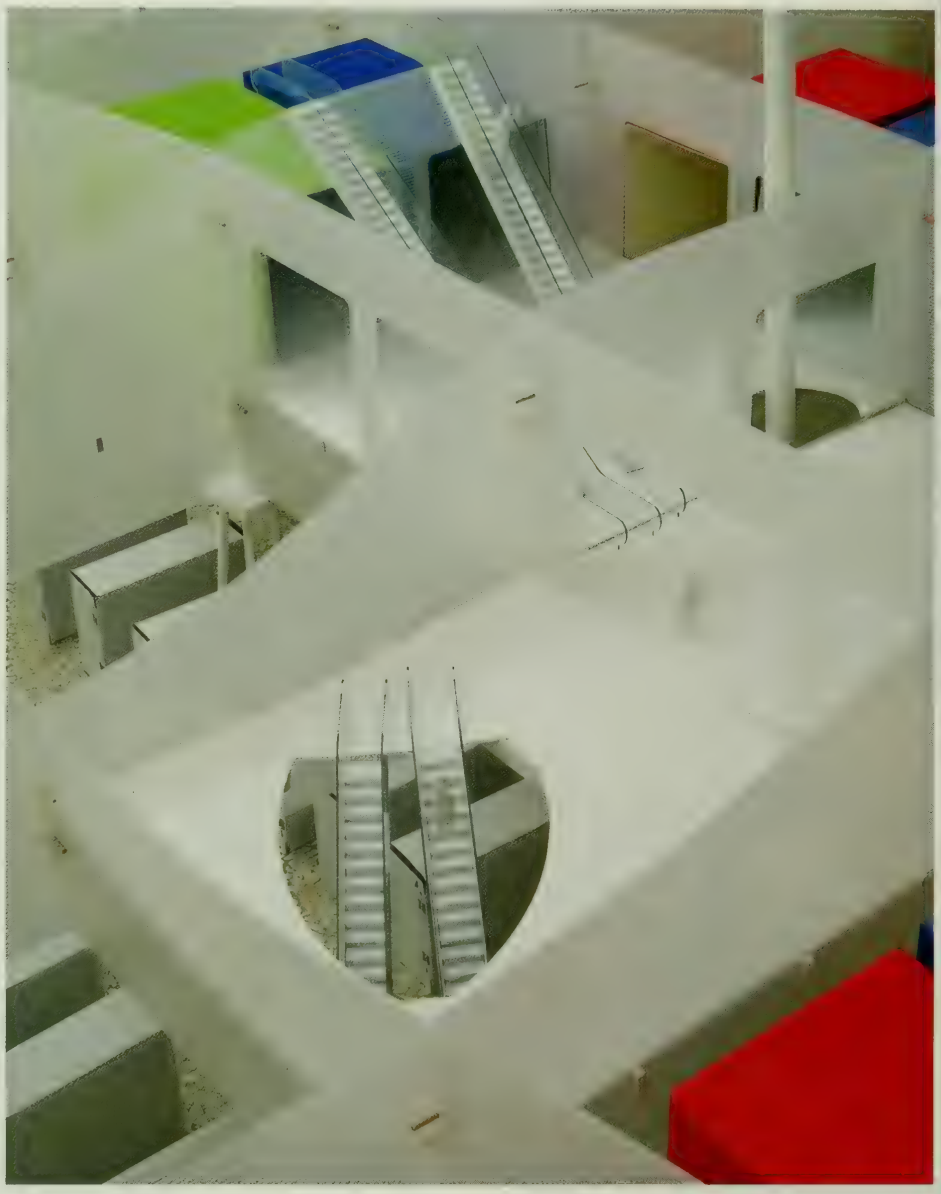


George Yu Architects
Shopping Center

As a response to the challenge of developing new forms of architecture and urban design out of existing building types in the *Transcending Type* exhibition, George Yu Architects took on the big-box shopping center. The firm proposes weaving elements of conventional shopping centers with those of the super-size ones in a landscape of terraced residential buildings and public parks. The project, dubbed *Shop Lift: Rethinking Retail*, is designed with a continuous columnar grid supporting parking, big stores and small shops, roof top terraces and plazas, and residential units atop the complex. The model in the installation, composed of hollow-core plastic-panel and terry-cloth fabric, was put together on-site.

George Yu, AIA, who is based in Los Angeles, has designed over 65 projects, including the prototypes and rollout of fashion boutiques for Max Studio worldwide [RECORD, February 2004, page 150]. After working for Morphosis, he founded his office of George Yu Architects in 1992. Subsequently, he collaborated with Jason King as Design Office, which was included in RECORD's Design Vanguard 2000 [December 2000, page 100]. Yu is currently on the faculty of SCI-Arc and was winner of Canada's Prix de Rome for 2000.

Architect: *George Yu Architects—George Yu, AIA, principal*
Design concept: *Sandra Levesque, Jonathan Garnett*
Design team: *Konstantinos Chrysos, Marianthi Tatari*
Research and communications: *Linda Hart*
Installation: *Owen Gerst, Yosuke Sugiyama*
Fabricator: *Carole Yu*
Economic analysis: *Economics Research Associates (David Bergman)*
Executive adviser: *An Te Liu*
Software: *Autodesk*





In the retail center, parking is at ground level (opposite, bottom), with escalators taking visitors to the various shops and stores (above and left), and on up to the terraces, gardens, and residential units. The colorful elements represent boutiques that can be dropped into the framework of the mixed-used structure.

George Yu's shopping center (aka *Shop Lift*) presented a room-size model (right), to demonstrate the infill strategy of mixed uses (residential and public space) that could be built into the shopping center. Projected on one corner of the hollow-core plastic-panel model was an orientation video created by Audtodesk that illustrated the design process of each firm represented in the *Transforming Type* exhibition.





Tech Backstory: Reiser + Umemoto's Highway Interchange

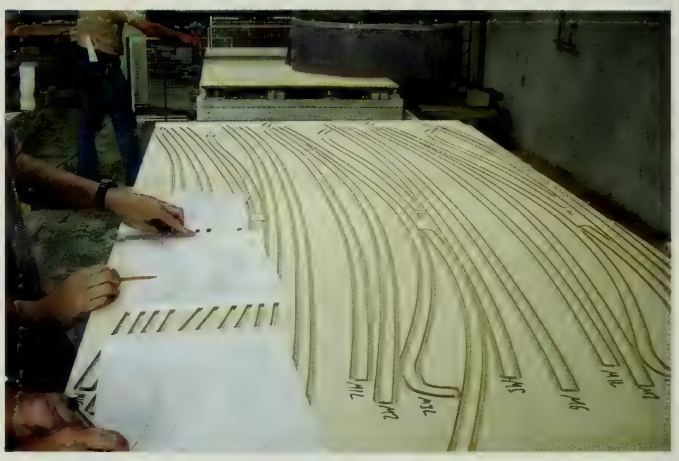
By Charles Linn, FAIA

The model for the bridge in the Highway Interchange installation of *Transcending Type* at the U.S. Pavilion grew out of a project Reiser + Umemoto is currently collaborating on with Charles Walker of Arup's Advanced Geometry Unit in London. The architects intend for the real structure to be made of glue-laminated timber at the Alishan Mountains in Taiwan. Theoretically, the full-size version is scalable—anything from pedestrians to automobiles could be carried by different versions. In the long elevation, the design bears an uncanny resemblance to the moment diagram for a a beam with a uniformly supported simple span with cantilevered ends included in every college-level structural engineering textbook.

The 63-pound, 33-foot-long latticelike model was fabricated in the U.K. by Timber Engineering Connections (TEC), which normally executes real, full-size structures. Gordon Cowley of TEC says, "In the past, three-dimensional wooden models like this have been made by draping thin strips of wood over a mold. This one gave us the opportunity to test the theory that we could make one out of flat sheets of material." Architectural Desktop 2005 from Autodesk was used to determine the shape of each frame, so these could be cutout sheets with TEC's five-axis computer-numerically-controlled (CNC) router.

The U-shaped pieces were made of 4-millimeter-thick plywood, which is too flexible to be cut out without being supported from the back, so it was glued to a medium-density-fiberboard base. During assembly, the structure's edge beam was held in position by a temporary form. The frames are loosened from the baseboard using solvent, then peeled off as needed and installed.

For the sake of accuracy in the assembly of the structure, even the location and angle of each bolt hole was determined by the software and drilled automatically. Wherever two struts cross, a single bolt holds the joint together. "There is only one way that it can go together," says Cowley, "so it has to be precise." ■







Technicians at Timber Engineering Connections check the dimensions of plywood frames after they have been cut out by a CNC router (top). The bridge is supported by a temporary frame during assembly (middle). The finished model sits in its crate (left) just prior to being shipped to Venice.

Kolatan/MacDonald's *Resi-Rise*

At *Transcending Type* in the U.S. Pavilion, Kolatan/MacDonald showed its long-term project, *Resi-Rise*, using three new means of expression: a model made of Dupont Corian; a small but complex model made with rapid prototyping equipment; and a new kind of hologram.

The 8-foot-high model, made of exterior Corian, was fabricated by Evans & Paul Unlimited, of College Point, New York. In the first part of the process, Autodesk Architectural Desktop 2005 was used to drive a CNC router. This cut out plywood shapes, which were stacked to create a multipart mold. Two-by-3-foot rectangles of Corian material were heated until flexible, placed between halves of the mold, and sealed in a neoprene vacuum bag. When air was evacuated from the bag, the mold parts were forced together to form the sheets. The shaped pieces were fitted together, joined with liquid Corian, then sanded and polished to create the final form.

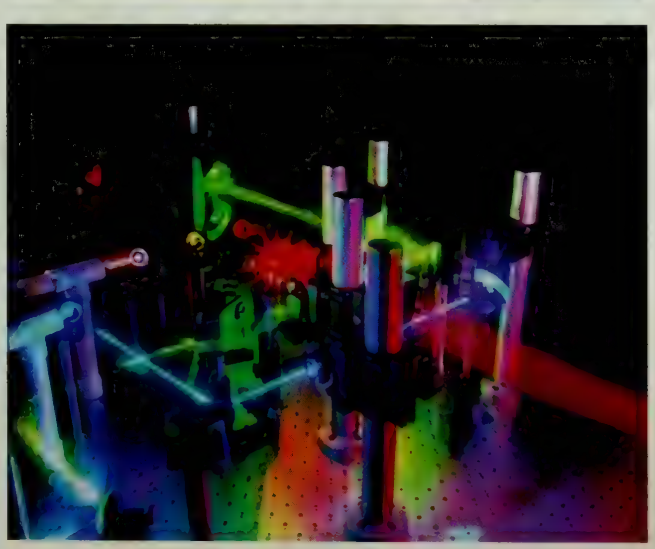
A smaller model was made by Z Corporation in Burlington, Massachusetts, using a 3D printer the company manufactures. The machine uses Architectural Desktop data to guide an ink-jet printhead. It applies layer upon layer of glue to a plaster powder base. As these layers build up, a three-dimensional form emerges. 3D printers are most often used to make engineering part prototypes, but architects are using them for modelmaking with increasing regularity.

The project was also illustrated in two dimensions using a recently developed type of complex hologram created by Zebra Imaging of Austin, Texas. Lasers are used to burn "hogels," which are high-resolution images, into photopolymer film. Each hogel is a digital hologram itself that represents 1 million images. There are about 600,000 hogels in each of two 2-foot-by-2-foot tiles that made up the hologram made for the show. ■





The Corian model during construction in Evans & Paul Unlimited's shop (above and left). Zebra Imaging's lasers burn film to create a hologram of *Resi-Rise* (below left and right).





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Metamorph exhibition in the Arsenale and the Italian Pavilion

By Joseph Giovannini

For the first time in a generation, the much-watched Venice International Architectural Biennale showed evidence that at last architects, tossed between Modernism, Postmodernism, and Deconstructivism over the past 25 years, have arrived at a consensus rich and credible enough to explore for several Biennales to come. In September, architectural historian Kurt W. Forster, the director of the ninth Venice exposition, *Metamorph*, presented work that supports what he calls a new architectural era. In the extensive exhibition spaces for which he was responsible—the Arsenale shipyard and the Italian Pavilion in the Giardini di Castello—Forster filled the halls with models and drawings characterized by complexity and an intense individuality, based on the concept of change and metamorphosis.

The static world once typified by traditional post-and-beam construction has yielded to organic landscape forms and to the compound curves of abstract mathematical shapes. If in 1980 the First International Architectural Biennale, titled *The Presence of the Past*, declared the overarching theme of history, the recent exhibition posited the end of a classical Newtonian world understood through stable structures and based on immutable laws. *Metamorph* offered buildings whose variety challenged the notion that there are any universal truths architecture must obey.

Hani Rashid and Lise Ann Couture of the New York–based firm Asymptote illustrated the idea of an

Joseph Giovannini is a teacher and a critic with a design studio in New York City.



PHOTOGRAPHY: © CHRISTIAN RICHTERS (THIS SPREAD)



The major installation for *Metamorph* at the Venice Biennale could be found in the Corderie of the Arsenale. Here, Asymptote designed large gondolalike platforms for the more than 200 design projects.

architecture of change with their installation in the Corderie of the Arsenale, where Venice once built the ships for its navy. Rashid and Couture designed long, white, elegantly abstract gondolas of Sheetrock and steel with warped surfaces on which models seemed to float, every podium different from the last in a constantly changing series. Beyond the tips of the gondolas, pulled and twisted like toffee into the spaces between the Corderie's columns, were drawings and photographs hung on curved walls of changing height. The walls cupped the voluminous interiors, transforming the straight, traditional brick building into a flowing space.

Asymptote aimed at building the idea of change into its installation. "The world is unstable, and people live in the unstable flow, in the flux of movement," says Rashid. The Biennale has come a long way since *The Presence of the Past*, where a procession of facades assumed the static lineup of shops on a traditional street. It has even progressed since 2000, when the computer made a premature debut at the Seventh International Architectural Biennale, but which was not properly contextualized in a convincing theme.

In Forster's postclassical shift to flux and instability for this Biennale, mystery trumped clarity as turning, self-mutating designs, often aided and abetted by computer technology, became the new norm of exploration. Yet the computer has been absorbed in projects that achieve a maturity beyond the formless blobs generated not many years ago. For example, in a small house in Venice, California, Greg Lynn avoided Gehry's complex exterior forms, developing instead distorted bubbles of space inside, where void itself becomes a solid.

Of all the projects in the Corderie (and the Biennale as a whole), the project that most emphatically embodied notions of



The 1,000-foot-long central space of the Corderie (a former rope manufactory for the Venetian shipyard) lent itself well to the display of the projects.

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In the Hyper-Projects section of the *Metamorph* exhibition, Preston Scott Cohen displayed the model of his Tel Aviv Museum of Art.

change and transformation—even though it was underdocumented and not prominently featured—was an outpost of the Guggenheim designed for Taichung, Taiwan, by Zaha Hadid. Beyond her computer-generated liquid shapes, Hadid proposes floors with entire sections that rise and fall, like elevator platforms, and roofs that lift like the top of a convertible. So many parts of the kinetic building move that the architect, working in collaboration with partner Patrick Schumacher, achieves an Einsteinian relativity in space: It's difficult to distinguish which parts actually remain stationary. It suggests a state of constant becoming.

While Forster organized the sections within the Arsenale according to formal categories such as Transformations, Topography, Surfaces, and Atmosphere, he concluded with a fifth section called Hyper-Projects. Here the architects orchestrated many contemporary themes into very complex and impressive wholes: Boston architect Preston Scott Cohen inverted the Guggenheim in his Tel Aviv Museum of Art in Israel, angling ramps in the center of the building around a void that rises through the building like a mysterious chimney. The architect achieves what Churchill might call an enigma wrapped in a conundrum. In the same section, the Viennese firm Coop Himmelb(l)au presented the Musée des Confluences in Lyons, France, a majestic cloud of glass billowing around a complex hall layered with ramps leading to many levels.

Forster continued his thesis in his selections for the Italian pavilion in the Giardini di Castello near the Arsenale. In one installation in the Italian Pavilion, UN Studio underscored the new architectural physics underlying many exhibits. The architects, Ben van Berkel and Caroline Bos, built a warped wall representing their design for a transportation hub in Arnhem, Holland, a computer-generated project of continuously turning surfaces, floors merging into walls merging into ceilings.

Forster devoted most of the space in the Italian pavilion to an exhibition presenting concert halls as a significantly proliferating building type, many built or proposed in what is emerging as architecture's new client state, China. New York architect Peter Eisenman, who won the Biennale's award for lifetime achievement, showed the Teatro de la Musica in Santiago de Compostela, Spain, whose roofscape resembles a rippling hillside. In Brazil, Christian de Portzamparc abstracted notions of the landscape for a City of Music in Rio de Janeiro. The monumental forms, bracketed between the horizontal planes of a structure reminiscent of a tropical veranda, recall distant mountains.

In 1991, at the Fifth Architecture Biennale, Frank Gehry exhibited Walt Disney Concert Hall in Los Angeles with baroque, ribbon-like bands wrapping the building, famously made possible by the computer. (The same building, completed in 2003, is represented again this year.) But now, architects in this Biennale use the computer to develop interior spaces that show the same degree of baroque complexity, perhaps a comment on Gehry's resistance to developing interiors as complex and as



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Associate Architect: Olson Sundberg Architects, Seattle, Washington
Landscape Architect: Berger Partnership
Contractor: Baugh Construction; Concrete Producer: Padman Concrete
Interior Floor: Emil's Concrete Construction

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curviplanar as his exteriors.

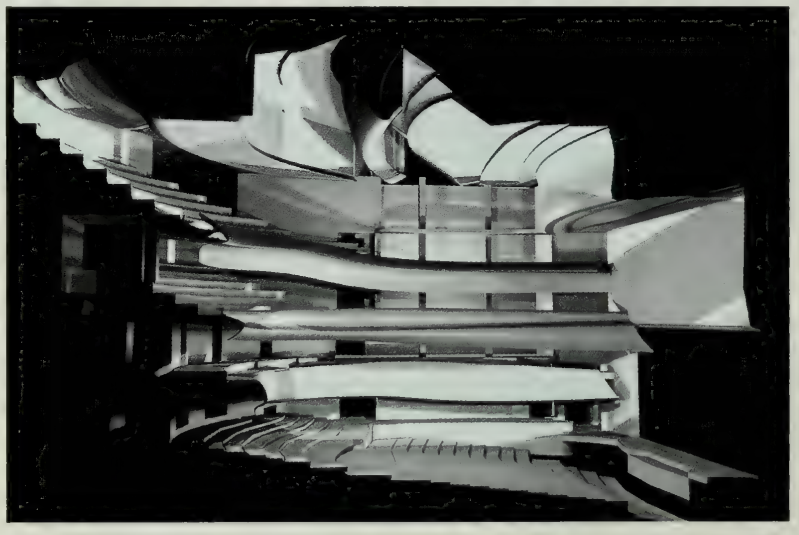
In their design for an opera house competition in Ghent, Belgium, Toyo Ito and Andrea Branzi turned Gehry's sock inside out, creating a boxy exterior with an interior as richly convoluted as a piece of Swiss cheese, the churning interior spaces shaped by continuously bubbled surfaces.

The show must be commended for presenting a cogent selection of relevant projects within an appropriate framework of ideas. The quality of the projects, however, was inconsistent, and sometimes disappointing: Minor works by minor figures were given shelf time equal to ranking work by ranking figures. There were also repeats from past Biennales (not just Disney Concert Hall), as well as old specimens that hardly constituted news. The selection left the impression that Forster had to stretch his sensibility to reach a generation younger than the one he understands best, Eisenman and Gehry's.

The achievement of the Biennale is that material and aesthetic evidence supports a valid and relevant thesis—we are in a new architectural era founded on the idea of change. The disappointment is that other shows, including the exhibition *Non-Standard Architectures* at the Pompidou Center early this year, and the *Latent Utopias* in the Graz 2002–2003 exposition in Austria, already pointed the way to the same conclusion.

The Biennale, then, accomplishes the considerable service of surveying and isolating the subject of change, and displaying its manifestations across the field. But it only reiterates and expands on what most of us already know. At least the general public now has the opportunity to view the products of a rapidly evolving architectural world. ■







One of the many projects in the Arsenale was Coop Himmelb(l)au's Musée des Confluences in Lyons, France (top), which is expected to open in 2007. Peter Eisenman's project for the Teatro de la Musica in Santiago de Compostela, Spain (left and bottom), now under construction, was on view in the Italian Pavilion as part of a survey of innovative concert hall design.

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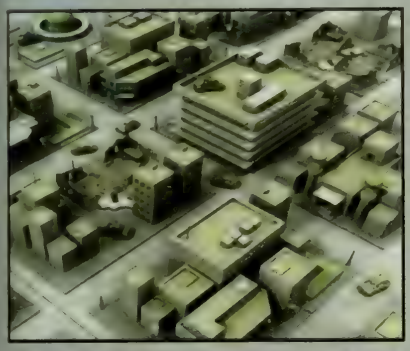
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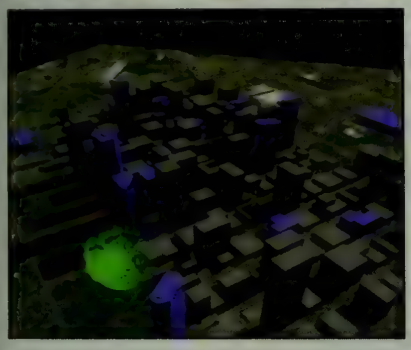
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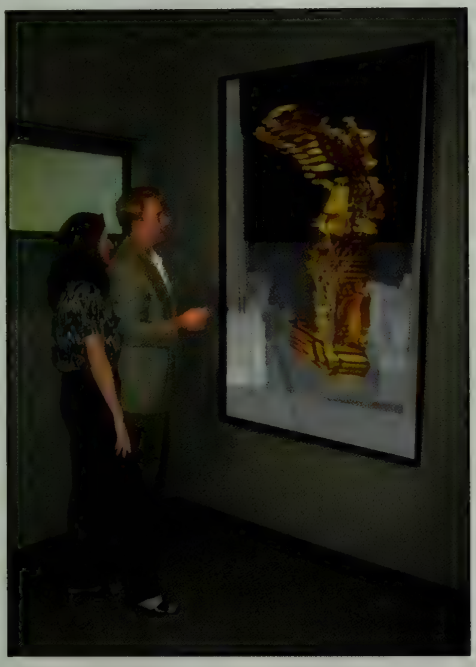
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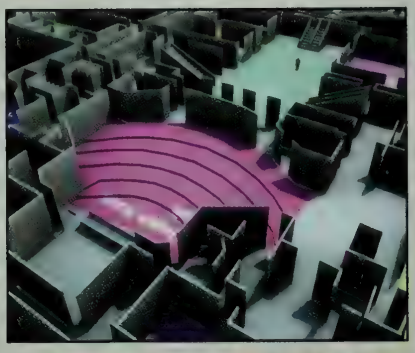
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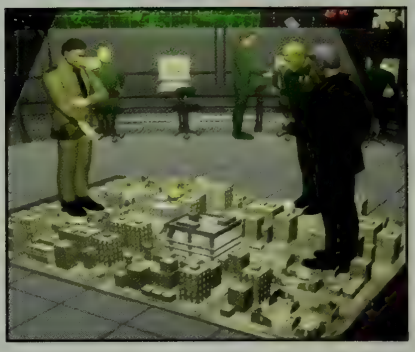






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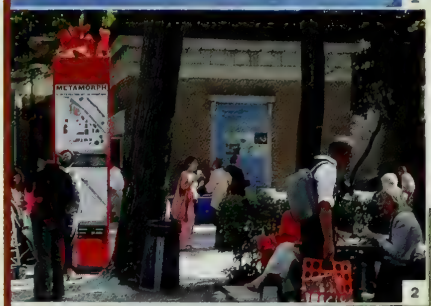
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Architectural Record Celebrates The Opening of the Exhibition **Transcending Type** at the Venice Biennale

State Department press conference at the U.S. Pavilion in the Giardini di Castello, September 10



















1. *State Department's Patricia Harrison with U.S. Commissioner Robert Ivy and architect Daniel Libeskind*
2. *The pavilion before the opening*
3. *Architects Sulan Kolatan,and William MacDonald*
4. *Architects David J. Lewis, Marc Tsurumaki and Paul Lewis*
5. *Architect Enrique Norten, Robert Ivy, architectural historian Joseph Rykwert and Daniel Libeskind*
6. *Holly Ivy, Montenidoli's Elisabetta Fagiuoli and Robert Ivy*
7. *Architects Jeanne Gang and Mark Schendel*
8. *Architects John Frane and Hadrian Predock*
9. *Curatorial consultant Christian Bruun and* RECORD*'s associate publisher Laura Viscusi*

Gala opening party at the Peggy Guggenheim museum hosted by *Architectural Record*













1. *Peggy Guggenheim museum*
2. *Thomas Krens, director, Guggenheim Foundation*
3. *SFMOMA's Joseph Rosa, architects Wolf Prix and Zaha Hadid*
4. *Deputy commissioner Clifford Pearson and architect Nanako Umemoto*
5. *Deputy Commissioner Suzanne Stephens and Guggenheim's Liesbeth Bollen*
6. *Sarah Amelar from* RECORD *with Barbara Pine*

National Pavilions in the Giardini, a quick look

By Fred A. Bernstein



Like an essay topic posed by a mischievous professor, Kurt Forster's catchall theme for this year's Architecture Biennale, *Metamorph*, left room for widely divergent approaches in the national pavilions. Instead of sending an exhibition to Venice, Russia sent groups of students. The pavilion, ingeniously, became a classroom for weeklong workshops on such topics as "the effects of industrial delocalization," and at the end of each week, the students' projects were displayed on the pavilion walls. Denmark was also in a what-if mode: The Danish Architecture Center sought out the Toronto-based Bruce Mau Design to work with a group of young Danish architects. Mau, a provocateur, posed questions to the group. One question, "What if Denmark doubled its coastline?" was explored in maps and models of a newly crenelated landmass. Another, "What if Greenland was Africa's water fountain?" contemplated melting glaciers to slake the world's thirst. (Identical exhibitions are running in Copenhagen and Toronto, and a summary of them is available at www.tooperfect.com.)

The exhibition in the Belgium pavilion, controversially, focused not on architecture but on its purported absence—in Kinshasa, capital of what was once the Belgian Congo. In a wall text accompanying photos by Marie-Françoise Plissart, anthropologist Filip De Boeck argued that in a decaying city, the human body is the "main infrastructural unit—Kinshasa's only 'building' that is constantly constructed and perfected." Some saw the exhibition as patronizing. Nevertheless, the Biennale judges awarded it a Golden Lion for best national pavilion.

The Netherlands approached its topic—how a densely populated country handles sprawl—with maps and statistics galore; like the Belgian entry, this would have been a better book than exhibition if not for an ingenious installation by Traast & Gruson, in which the placement of materials in drawers suggested a domestic-scaled dimension to a global problem. In the Polish pavilion, curator Adam Budak showed pieces by émigrés, including New York's Elizabeth Diller (who lived in Poland until she was six); and Zvi Hecker (who left for Israel after World War II), alongside work by young Polish practitioners. The Swiss installed a single, multiroom installation by Christian Waldvogel: The piece depicted the dismantling of the earth in order to build a better planet, Globus Cassus. Waldvogel's photomontages and portentous epigrams could be left hanging for next year's art biennale.

Canada, by contrast, took what seemed a conventional approach—giving its pavilion over to a single architecture firm, Saucier & Perrotte—but with unconventional results. The firm hung photos of completed works and renderings of a planned Canadian Museum for Human Rights alongside folded-metal sculptures suggested by the building forms. By using the techniques of artists not as an end, but as a means of elucidating architectural ideas, the Montreal-and-Toronto-based firm made a visit to Canada's pavilion as essential to Biennale attendees as a vaporetto. ■



The Dutch Pavilion featured *Hybrid Landscapes: Designing for Sprawl in the Netherlands, 1980–2004*, curated by the Netherlands Architecture Institute (top). In the Canadian Pavilion (above), architects Saucier & Perrotte displayed an array of recent projects.

Fred A. Bernstein, who frequently writes on architecture and design for The New York Times, *is the author of* Renovate *(Filipacchi, 2004).*

Gala opening party at the Peggy Guggenheim museum hosted by *Architectural Record*

















1. *Robert Ivy and* New York Times *writer Julie Iovine*
2. *Architect George Yu and his wife Carole*
3. *Jeanne Gang with Stefano Giustiniani of the U.S. Embassy Rome*
4. *Jesse Reiser, Nanako Umemoto and Arup's Francis Archer*
5. *Kate Ryan and Megan Shaughnessy of Dupont Corian with* RECORD*'s Charles Linn*
6. *Winka Dubbeldam, Tom Kovac and Gary Nemchock of Titanium Metals*
7. *Wexner director Sherri Gelden and exhibition supporter Jeffrey Brown*
8. *Special Projects Manager for Peggy Guggenheim Collection, Chiara Barbieri, with Barbara Pine*
9. *Aaron Betsky of NAI, with architects Louisa Hutton and Margaret Helfand*

Cocktail reception at the Hotel Danieli honoring Autodesk's patronage of *Transcending Type*

















1. *Phillip Bernstein, FAIA, of Autodesk with Patricia Harrison and Brian Sexton of the State Department*
2. *Author and architect Charles Jencks*
3. *Architect Hans Hollein*
4. *MoMA's Paola Antonelli and Phaidon's Karen Stein*
5. *Laura Viscusi and Anna Schlesinger from* RECORD
6. RECORD*'s sales representative Bill Hague and his wife, Shirley*
7. *Tim Johnson of NBBJ and Karen Melk*
8. *Suzanne Stephens of* RECORD*, Phil Arnold of Scofield and Deborah Gallo of Autodesk*

National Pavilions in the Giardini, from another angle

By Jayne Merkel



In the German Pavilion, a large-scaled photographic mural designed by Cyan (Berlin) + Tobias Steinert illustrated 39 recent buildings (left). In the British Pavilion, Future Systems displayed a colorful model for a mixed-use tower in Berlin (below and detail, bottom).

In stark contrast to the mysterious interior of the gigantic old Corderie of the Arsenale, with its spotlighted models and flat screens glowing in a vast dark space, is the brightly lit, human-scaled German pavilion. Curated by Francesca Ferguson, the pavilion in the Giardini di Castello was filled with a realistic-looking colored photomural showing 39 new buildings in the landscape on the edges of German cities today. The wall-size photo collage curved around partitions between rooms in a continuous band, where suburban views flowed seamlessly into urban, reclaimed-industrial ones. The photos of the projects by 36 different firms had been inserted into the mural so that the viewer could see at a glance the impressively wide range of work being done in Germany today and how it could affect the new cityscape of sprawl "where architects rarely leave their marks."

With so many projects on view, however, it is hard to remember any one. Luckily, one of the most interesting firms, Sauerbruch Hutton Architects, also had a *Soundscape* installation in the Arsenale that showed its Henisgsdorf Town Hall. Here, photos simulated in three dimensions with old-fashioned red-and-green 3D glasses, and enlivened by very high fidelity recordings of the sound in the space, reminded the audience that architecture be could be a rich multisensory experience.

The British Pavilion, curated by Peter Cook, awarded nine practices with rooms of their own, and with atmospheres as divergent as British society itself is today. Life-size, two-dimensional, black-and-white photographs of the participating architects greeted the visitor at the entrance, before he read the wall text: "For the presentation of a discussible British architecture, I have deliberately avoided a single polemic, but have offered nine points of reference, 'nine positions,' all of them represented by architects who conspicuously know how to design rather well."

The most memorable gallery housed Future Systems' big, bright green, yellow, and red model of a proposed mixed-use tower for Berlin Alexanderplatz, intensely colored to contrast with the grim grayness of old East Berlin. Here the firm's well-known curves were confined to a few edges in plan and elevation and some "sculptural dents." Subtle though these rounded deviations are, they manage to have a surprisingly strong impact on the carefully articulated project. The model was surrounded with sketches, drawings, and photographs of recent works by Future Systems' Jan Kaplicky, Amanda Levete, and their colleagues.

Ron Arad transformed his space with barely graspable electronic images embedded in a gallery-size LED screen made of Corian laminate. Because the moving pictures and still sketches of a proposed "Upperworld" hotel for the top of London's Battersea Power Station have been implanted (with 37,127 fiber-optic pixels) deep within in the hard shiny wall, they appeared tantalizingly on, in, and under its dark translucent surface. Arad's glittery installation recalled the earlier work of Bernard Tschumi, his teacher at the AA in London. But Arad has updated the imagery with today's technology (or maybe tomorrow's) so he could dazzle viewers with recognizable images and give them a role in its creation—by simply dialing their cell phones. A spiral chandelier named *Lolita* displayed text messages that visitors to the Biennale could send by calling a designated number. The chandelier, which Arad created for Swarkovski, was made of a crystal pixel board. (It contained 2,100 crystals and 1,050 white LEDs.)

At the other end of the technological scale was John Pawson's necessarily still, restrained, and light-filled evocation of the Novy Dvur Monastery he is building for the Cistercian Abbaye Notre-Dame de Sept-Fons in the Czech Republic. Differently (but equally) low-tech were the three-dimensional, origami-like images of Asian cities C.J. Lim made of cardboard and thread.

Other participants in the British Pavilion, sponsored as usual by the British Council, were Adam Caruso and Peter St. John of Caruso St. John, Kathryn Findlay of Ushida Findlay, Richard Murphy, Ian Ritchie, and Gavin Robotham with Peter Cook. ■





Jayne Merkel's monograph on Eero Saarinen is due in April 2005 (Phaidon).

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Snapshot



By Beth Broome

Dovecote acts as beacon to future pigeon fanciers

Few creatures rival the pigeon's ability to divide the world into two opposing camps: lovers of the bird and sworn enemies. Across the globe, attempts to cull pigeon populations have led to countless creative methods of extermination. But in the small French town of Caudry, near Cambrai, a temple of sorts has been erected in homage to this familiar fowl.

Twenty feet high and 16 feet wide, the *pigeonnier*, or dovecote, is a wood-and-resin-paneled capsule built to house domesticated pigeons and, in its role as an educational center, to rekindle interest in the dying tradition of raising and training the birds.

The dovecote is the first architectural project of Paris-based industrial designer Matali Crasset, who was commissioned for the job by a dove- and carrier-pigeon-breeders' association. The pigeon fanciers, as they are called, were referred to Crasset by Artconnexion, a contemporary arts association that organizes public art projects financed by the Fondation de France.

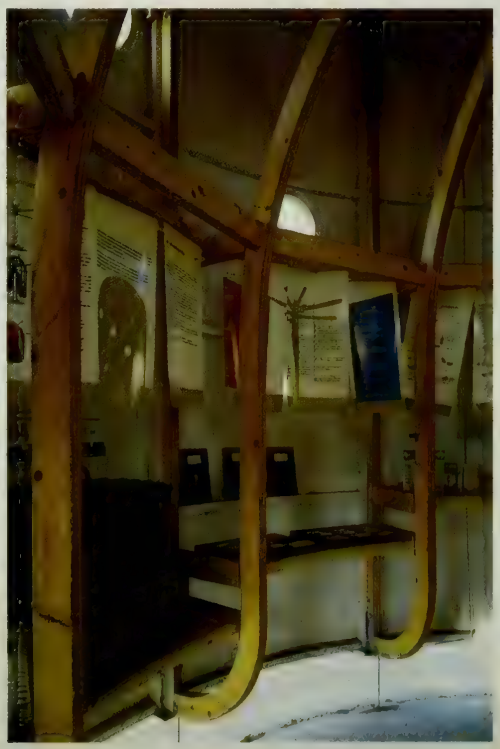


Matali Crasset's dovecote offers many amenities to its avian residents, such as a sanatorium (top) and ample perches (bottom, left). There is also a learning center for visitors (bottom, right).

The unique demands and constraints of a pigeon loft helped determine Crasset's approach to the project. Before setting to work, she spent several months talking with pigeon fanciers and observing life inside a typical pigeon loft, which in northern France is usually located in a homeowner's attic. In meeting the strict requirements, however, the bird breeders "didn't want to make something nostalgic," says Crasset. "They wanted to bring a message to the new generation: that this practice has a place in the future."

To allow for increased air circulation, Crasset elevated her dovecote off the ground and added a ventilation chimney on top. To further help pigeons feel in their element, she punched out small, circular windows that mimic the effect of light filtering into an attic, and outfitted the interior with a treelike, galvanized-steel structure and a wood skeleton resembling house framing. Suspended from the cupola—which was prefabricated for an astronomical observatory and adapted for this project—is a red wood box that serves as a hospital for sick birds being kept in quarantine. Educational exhibitions that change throughout the year line the wall of the dovecote, which is open to visitors by appointment.





In response to the windy environment of Caudry, Crasset chose a rounded shape, allowing the structure to be caressed by the wind rather than fighting against it. She also felt the capsulelike form helped communicate a sense of protectiveness and, at the same time, of possibility: "This pigeon loft could, in a way, take off," she says.

Not only does the freestanding dovecote move this type of structure away from its former domestic context and out into the public realm, but as an iconic element in the landscape, it acts as a literal beacon, bringing a new visibility to an age-old activity. "Understanding the constraints of a project, you can make a jump, instead of just a step," says Crasset. "You can take things a bit further—not to make a revolution, but to create an evolution." ■

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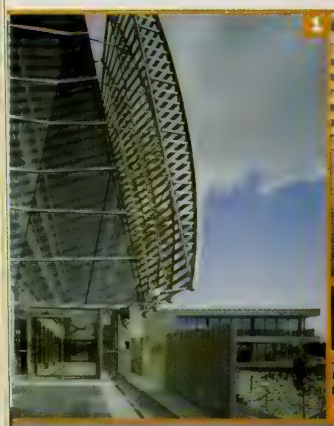


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FEATURES

The 8th Annual BW/AR Awards: Design solutions tha enhance business success





WINNERS

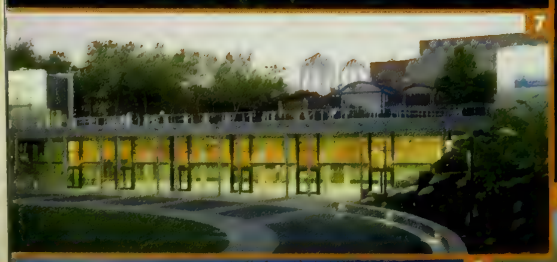
1. **Limerick County Hall**
 Photo: © Michael Moran
2. **Britomart Transport Centre**
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3. **Ehime Prefectural Budokan**
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4. **Humane Society/SPCA of San Antonio and Bexar County**
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5. **James M. Wood Community Center**
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6. **Finn Center, Community School of Music and Arts**
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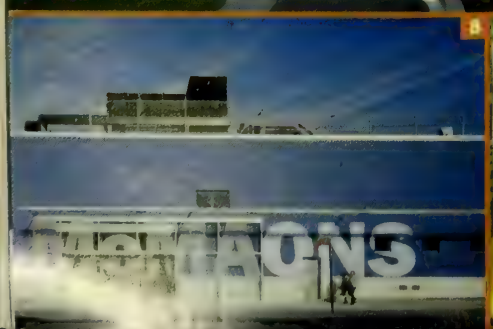












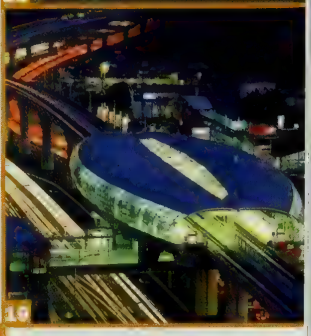












FINALISTS

11. Quintessa Winery
Photo: © Richard Barnes
12. FDNY Fire Zone
Photo: © Michael Moran
13. University Health Network/ The Toronto Hospital New Clinical Services Building
Photo: © David Whittaker
14. General Mills, World Headquarters
Photo: © George Heinrich
15. Hotel Monaco (Tariff Building)
Photo: © Kimpton Group
16. Marion Oliver McCaw Hall
Photo: © Fred Housel
17. Ford Rouge Center
Photo: © Ford Photographic
18. San Francisco Ferry Building
Photo: © Richard Barnes
19. Brentwood Skytrain Station
Photo: © Nic Lehoux

EDITORS' CHOICE

20. Satellite Operations Facility & Administrative Offices
Photo: © Morphosis/Einhorn Yaffee Prescott
21. Montclair Lofts
Photo: © Oppenheim Architecture





By Jane F. Kolleeny and Audrey Beaton

Great designs demand great clients," observed Moshe Safdie, FAIA, jury chair of this year's BW/AR Awards, invoking Louis Sullivan when describing the primary condition for the winning projects submitted in this year's program. Architects cannot do their best job without a client participating in and understanding the aims of a design. Clients can't use architecture to its best advantage without architects understanding the clients' business-driven mandates. Because collaboration plays so valuable a part in determining winning projects, jury members in the program are drawn from both the business/institutional communities and the design professions to assure a balanced vote.

In the submission narratives, architects describe how their designs respond to the needs of clients, and clients provide concrete data on how design facilitated better business. Business here is broadly defined to encompass any entity that serves the public and seeks to succeed according to a variety of criteria, which may include employee retention, increased quality output, or enhanced publicity or branding. In the end, all the submissions cited on the following pages get to the heart of what collaboration is really about. Herein find the 2004 winners and finalists of the Business Week/Architectural Record Awards program.

For more information or to request a call for entry for the 2005 BW/AR awards, send an e-mail to bwarawards@aia.org or call 888/242-4240.

AIA's 2004 Business Week/Architectural Record Awards winners illustrate the entrepreneurial spirit in both management technique and building design.

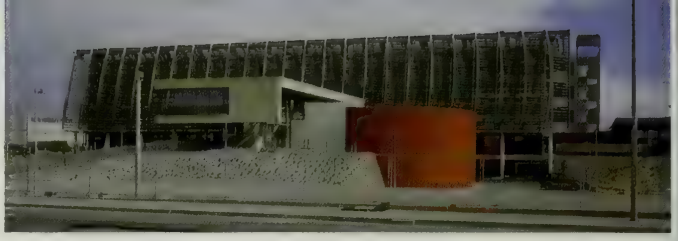
WINNER

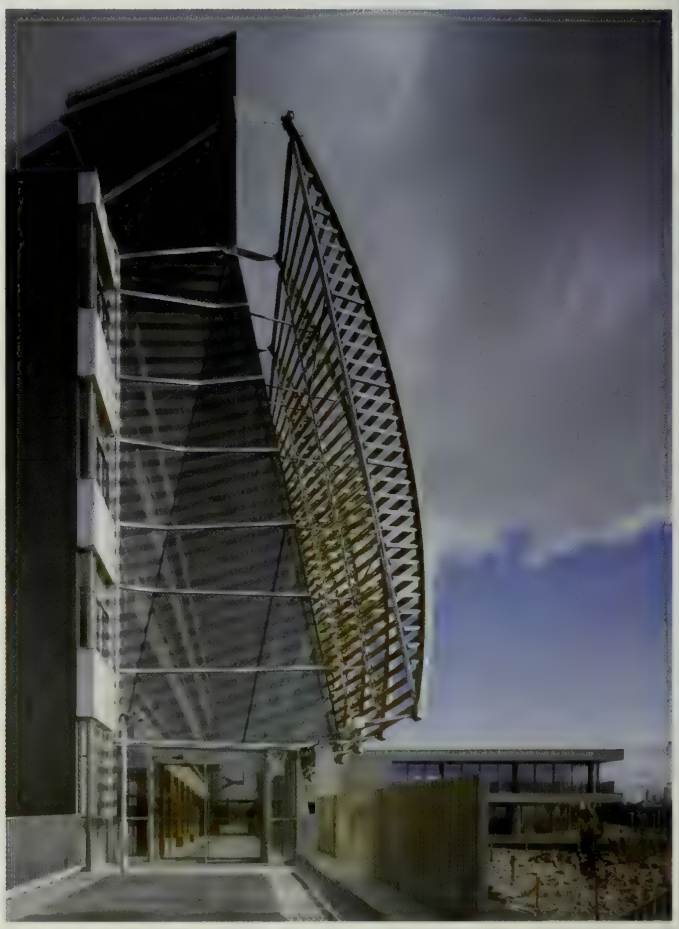
AN ATRIUM BREATHES NEW LIFE INTO GOVERNMENT

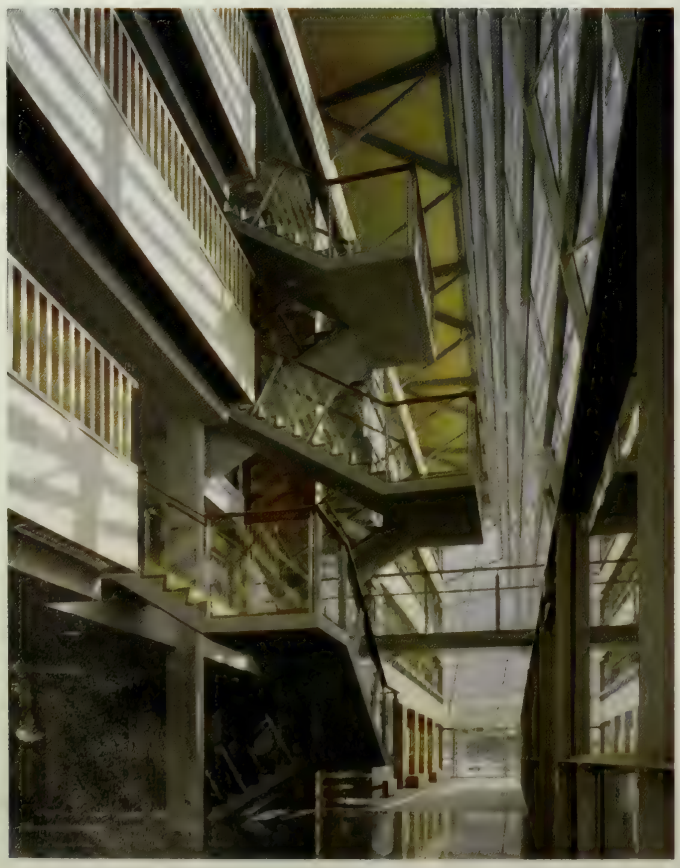
Program: The local government sought to create a civic building that would facilitate better service, accountability, transparency, and easy access to information for the public. The design team sought to provide comfortable working conditions for the staff, while reducing energy consumption in the building.

Solution: A glass and timber atrium, lined with counters where people can meet with local authorities, provides an accessible and efficient interface between the public and the government while also serving as the "ventilation lung" of the building, bringing fresh air into office spaces. The building uses only natural energy resources. Without a mechanical plant or air-conditioning unit installed in the structure, it has lower CO_2 emissions. Special light fittings, designed by the architect with daylight sensors and dimmable ballasts, allow less artificial light to be used, and the building's prominent bris-soleil is constructed of timber from a replenishable source. The staff takes pride in its innovative home and the new institutional identity that it projects. The demonstrated success of the contact it allows between the government and the public is admired throughout Europe.

"An attention to detail emanates from the building . . . indigenous materials used in a moving way." — ***FRANCES HUPPERT, FAIA***









Project: *Limerick County Hall, Limerick County, Ireland*
Architect: *Bucholz McEvoy Architects*
Client: *Limerick County Council*
Key Players: *John Sisk and Company (general contractor); Michael Punch & Partners (structural); Buro Happold (building services)*

WINNER





AN URBAN CENTER TAKES ROOT AS AUCKLAND'S HISTORY IS PRESERVED

Program: In order to limit traffic congestion and reduce pollution, Auckland needed to develop a major public transportation hub. The city sought a prominent train station to serve as a focal point for supplemental transportation initiatives, including an upgrade of ferry terminals and bus stops. The project would serve as a catalyst for regenerating the city's urban core and fostering civic pride.

Solution: The architects' design called for the renovation and redevelopment of the city's central post office as the main hub, linked by a transparent glass structure to a new, one-of-a-kind underground diesel train station. The sensitive restoration of the historic structure and grand scale and modern materials of the new station form a visually dynamic partnership. Sculpture and artwork from local residents enhance the station's public streetscape and further its role as a civic ally. In less than a year since the facility's opening, public transportation use has risen by 30 percent. The station's flexible design enables it to remain vital as train capacity continues to rise, new stations are built, and track improvements proceed throughout the area.

"The architects devoted tremendous energy to creating a building that overcame many technical obstacles." — *DOUGLAS GARDNER*



Project: *Britomart Transport Centre, Auckland, New Zealand*
Architect: *JASMAX; Mario Madayag Architecture (associate architect)*
Client: *Auckland City Council Britomart Project Group*
Key Players: *Opus International Consultants (engineers); Downer Construction (general contractor); Beca Carter Hollings & Ferner (project managers); WT Partnership (quantity surveyor); Salmon Reed (heritage architects)*

WINNER

TRADITIONAL DETAILING INSPIRES THIS ATHLETIC FACILITY

Program: The client envisioned a state-of-the-art athletic facility that would improve the institution's overall national and international prominence and increase enrollments and visitors. They wanted a building that would be highly visible and sustainable. They also sought a facility that reflected local traditions and cultures, involved the community during the design process, and stimulated the local economy by using available resources.

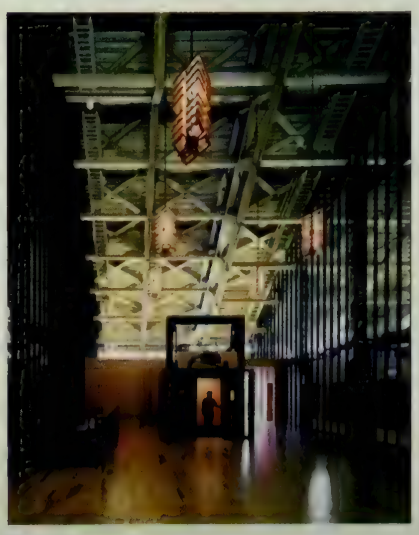
Solution: Featuring one of Japan's largest wooden gable roofs, this facility welcomes visitors into a vast public space hosting athletic activities, cultural events, conventions, and festivals. The two new buildings are made almost entirely of indigenous materials. The roof's cedar truss beams, whose diamond pattern is reminiscent of traditional Japanese clothing designs and family crests, were all produced locally. Similarly, the stones used for the floor and the clay and ceramic tiles used for the roofs are from the immediate area. Product supply for the building's construction netted a sizable income for the economy. Five months after completion of the facility, the number of visitors increased nearly sixfold, with 20 major events having occurred in the space, including one international athletic competition.

"It's like an Olympic Village. The traditional Japanese temple vocabulary elevates it to a romantic framework." — *ALLISON WILLIAMS, FAIA*









Project: *Ehime Prefectural Budokan, Matsuyama City, Ehime, Japan*
Architect: *Ishimoto Architectural & Engineering Firm*
Client: *Ehime Prefecture*
Key Players: *Shigeru Ban/Van Structural Design Studio (structural); Takenaka Corporation (general contractor)*

WINNER





A COMMUNAL FEEL DELIGHTS INHABITANTS, CLIENTS, AND STAFF

Program: Cold, impersonal, dank, and odiferous animal shelters are typically unpleasant both for animals and the employees and volunteers who care for them. The program for this new facility sought to use design to reverse this pattern. Higher adoption rates, lower animal return rates, and increased retention and recruitment of employees were among the goals of the facility.

Solution: The architects designed the new shelter like a retail complex. They situated the building on a prominent site in an affluent area of town. A large front porch serves as a visual billboard, inviting passersby to come inside. Consisting of several small buildings organized around a central courtyard, the shelter's scale enhances the communal feel. Large, sloping roofs respond to the hot Texas climate, producing a comforting residential feel. The passage through these buildings is like meandering through the aisles of a store. The more sought-after goods—in this case, puppies and kittens—are reached only after traveling through the rest of the space where adult animals reside. Since its opening, adoption rates are up 95 percent, and three times as many adult dogs and cats have been adopted than before. The facility's educational center is constantly booked thanks to enhanced public awareness of the shelter and its initiatives.

"A result of very direct programming, a desirable location, and really nice buildings." — *RAND ELLIOTT, FAIA*



Project: *Humane Society/SPCA of San Antonio and Bexar County, San Antonio, Tex.*
Architect: *Alamo Architects*
Client: *Humane Society/SPCA of San Antonio and Bexar County*
Key Players: *Tom Green and Company (m/e/p); Fisher Engineering (civil); WSC Structural Engineers (structural); John Meister Landscape Architecture (landscape); Connolly Architects (shelter design consultant); Metropolitan Contracting (general contractor)*

WINNER

AN INNER-CITY STRUCTURE BUILDS COMMUNITY AND REBUILDS LIVES

Program: Located in Los Angeles's Skid Row, this community center aimed to use architecture as a tool for civic and social betterment. The client firmly believes that everyone, no matter what their circumstances, is entitled to a safe, clean, well-designed space. An earlier collaboration between the architect and client resulted in a successful homeless drop-in center and park. However, with nearly 1,400 homeless people visiting daily, the need for an interior community space quickly became evident.

Solution: Regarded as a "living room" for Skid Row, the project serves as a safe harbor, aiding the recovery of addicts and providing for the homeless community at large. The building is sited at the edge of the park, welcoming the neighborhood inside with its prominent staircase, and presenting an air of civic grandeur with its 40-foot-high colonnade. The interior spaces are flooded with light. The building's meeting room, office space, and rooftop garden accommodate weekly meetings of seniors, 12-step recovery programs, art workshops, chess clubs, poetry readings, and biweekly health examinations. Using color and light, civic style, and humane scale, the architect and client prove that architecture can empower and build community where there was none.

"Often these centers are just a roof. They don't have the emotional power of architecture, but this one really does." — *RAND ELLIOTT, FAIA*





Project: *James M. Wood Community Center, Los Angeles, Calif. [RECORD, September 2003, page 87]*
Architect: *Lehrer Architects*
Client: *SRO Housing Corporation*
Key Players: *Reiss, Brown, Ekmekji (structural); Ideas for the Built Environment (mechanical); Agoura Electric Company (electrical); Mia Lehrer + Associates (landscape); Robert F. Vairo Construction (general contractor)*



WINNER



Project: *Finn Center, Community School of Music and Arts, Mountain View, Calif.*
Architect: *Mark Cavagnero Associates*
Client: *Community School of Music and Arts*
Key Players: *Western Investment Management (project manager); Murphy Burr Curry (structural); C&B Consulting Engineers (m/e/p); Stephen Wheeler Landscape Architects (landscape); Charles Salter Associates (acoustical)*



A SCHOOL'S NEW HOME SUCCEEDS IN ITS "ARTS FOR ALL" MISSION

Program: For 30 years, this arts education organization, the largest of its kind in the region, was housed in six temporary structures. Seeking to reach more members of the community and improve its quality, the client desired a permanent home. The new building needed to be functional and inspirational. Programmatically, it required acoustical efficiency and a flexible plan. Formally, it desired to embrace the community and encourage all forms of art.
Solution: The architect designed the new school as a low building planned around a courtyard. Sloping roofs provide a sense of openness and facilitate acoustic integrity, and clerestory windows flood the building with light. Built of poured-in-place concrete, the building minimizes noise from nearby highways, while wood infill gives it warmth. Before, the school turned away students because of lack of space; now it offers twice the space of its previous home and is conveniently located near public transportation. With 17 state-of-the-art private studios, numerous classrooms, a ceramics studio, exterior performance space, and a 200-seat concert hall, the school's student body, faculty, and programs have all increased.

"A beautifully cast-in-place concrete structure using natural materials creates a very successful sense of place." — ***FRANCES HUPPERT, FAIA***



WINNER

AN UNOBTRUSIVE BUILDING PROVES THAT LESS IS MORE

Program: A public/private partnership sought to create a new urban park and exhibition hall that could be used as a multipurpose public facility and communal gathering place for an estimated 900,000 people a year. The partners sought to redevelop an existing two-city-block site by demolishing a pavilion that sat dormant and constructing a new facility that would be sustainable, environmentally friendly, and highly adaptable.

Solution: The pavilion was intended to satisfy many functions and serve various user groups, so the design process was a collaborative one among client, campus institutions, organizers of major festivals, and representatives of cultural groups. Because everyone desired to provide a high ratio of open, green space to building/paved surfaces, a "subterranean" design solution made sense. Efficient and sensitive planning placed 14,000 square feet of building space below a rooftop plaza. The glazed north facade of the sunken building uses roll-up doors to open onto an adjacent green and connect the interior exhibition space to a fountain beyond. The green was regraded into a bowl shape to better accommodate large-scale public gatherings. Burying the building below ground reduced the structure's thermal load and lowered lighting energy and heat costs, while the roll-up doors provide natural ventilation, allowing the pavilion to operate without air-conditioning for most of the year.

"It is a highly sustainable structure with an extremely heavy public use of the rooftop plaza." — *PAULA S. WALLACE*





Project: *Fisher Pavilion at Seattle Center, Seattle, Wash.*
Architect: *The Miller/Hull Partnership*
Client: *City of Seattle, Seattle Center*
Key Players: *AKB Engineers (structural and civil); The Greenbusch Group (mechanical/acoustical/audio); SiteWorkshop (landscape); Howard S. Wright Construction (general contractor)*



WINNER





A MUSEUM GAINS VISIBILITY AS ITS HOME EVOLVES

Program: In the middle of an $858 million capital campaign, the Museum of Modern Art needed to create a temporary space to house the museum's collection that would maintain its identity and membership loyalty while its permanent location closed for renovation and expansion. The new building would serve as a temporary exhibition space in a visually inventive way, but be able to quickly convert back to its original program as a site for museum support, preservation, and collections storage.

Solution: The design team transformed a former staple factory into a museum facility with a highly visible public face. Movement became a central theme for the design of the building, from the transformation of the museum's recognizable logo seen from the New York City subway to an elevated entry sequence to the ticket area, coat check, and public restrooms, along which a visitor can view the procession throughout the building. State-of-the-art conservation labs, digital-imaging studios, archives, and storage facilities reflect the institution's high ideals and will continue to be used at this site after the museum returns to its permanent home. The success of the project is easy to see. The large number of visitors to the new galleries exceeded projected estimates, the staff enjoys working in the new space, and museum membership has remained steady despite the move.

"MoMA created a significant presence in an unlikely location." — *BETSY COHEN*





Project: *MoMA QNS, Long Island City, N.Y. [RECORD, August 2002, page 106]*
Architect: *Cooper, Robertson & Partners; Michael Maltzan Architecture (associate architect for lobby and roofscape)*
Client: *The Museum of Modern Art*
Key Players: *Turner Construction (construction management); Lori Weatherly Interiors (interior design); Goldman Copeland Associates (m/e/p); DeNardis Associates (structural)*

WINNER

HI-TECH DESIGN INVIGORATES AN ANCIENT ART

Program: Iron making and blacksmithing, two of the most popular programs at the Penland School of Crafts, had outgrown their studio. A new state-of-the-art facility needed to demonstrate the school's commitment to the trades and offer plenty of natural light and good ventilation. The space required a flexible design to accommodate future change in the technology and teaching of the two arts, and to promote an open dialogue between teachers and students.
Solution: The architect and his team attended an intensive three-day course in iron making in order to better understand the art and to afford the school an opportunity to collaborate on the design of the new studio. A repetitive, rigid-frame structural module was used as a design element for the new, 5,500-square-foot space. Roll-up doors and outdoor teaching areas open the studio to mountainside views. Skylights bring natural light into the space and promote energy conservation. An open plan allows for increased transparency throughout the facility and visual connections between teachers and students. Glass-block walls provide acoustical separation where needed. The new studio increased the school's public recognition, prompting enrollment to skyrocket 100 percent over previous years, raising the level of expectation for the other departments on campus.

"Designed in a minimal way, the project features state-of-the-art machinery enhancing the craft of blacksmithing." — *PAUL HERZAN*





Project: *Iron Studio, Penland School of Crafts, Penland, N.C. [RECORD, October 2002, page 136]*
Architect: *Frank Harmon Architect*
Client: *Penland School of Crafts*
Key Players: *Synergetics (structural); Ernest Myatt (mechanical); Appalachian Building Services (general contractor)*



WINNER





DIGNITY AND LIGHT REDEFINE SAFETY

Program: Formerly housed in a series of one-story buildings, the Israeli Foreign Ministry hoped to consolidate its offices into a single structure. The new facility would host efficient and flexible administration offices, provide space for events and ceremonies, and serve as a model of security in the Middle East. The project needed to contextually fit into the wall-like row of buildings that surround the site, maintaining the intimate scale of its predecessor.

Solution: Despite a high level of security, the new ministry appears inviting and dignified. An elegant and practical solution eliminated the need for security barriers. Instead, plantings obscure views and block access to the entrance, and a sloping arrival court creates separate entrances for dignitaries and officials (on the lower level) and staff (on the upper level). A soft yellow glow emanates from the building's central reception hall, projecting a visibly elegant image. Despite its striking appearance, the hall is able to withstand an explosion, thanks to innovative aluminum spring clips that enable its onyx-panel cladding to retract and recoil. A teak screen on the mezzanine walkway of the reception hall protects against inward flying debris. The staff feels comfortable and secure in their new offices.

"Demanding security issues were integrated into the architecture so they became either environmental assets or invisible." — ***MOSHE SAFDIE, FAIA***





Project: *Israeli Foreign Ministry, Jerusalem [RECORD, June 2003, page 120]*
Architect: *Diamond and Schmitt Architects; Kolker, Kolker Epstein Architects (associate architect)*
Client: *Israeli Foreign Ministry*
Key Players: *E. Rahat & Associates (construction management); Yaron-Shimoni-Shacham Consulting Engineers (structural); The Mitchell Partnership (mechanical); Aarenson Construction (general contractor)*

Nine finalists provide novel approaches to design

What works for a corporation undertaking the design of new headquarters can also work for a museum, a winery, or a mission-critical facility. Good design has a powerful impact on any type of building and the activities it accommodates, very often demonstrated by measurable results. Illustrating this point are nine award finalists and two Editors' Choice winners for unbuilt projects, which join our 10 winners. *Jane Kolleeny and Audrey Beaton*

NATURAL BEAUTY AND FLEXIBILITY DISTINGUISH THIS WINERY

After years of transporting his grapes off-site for crushing, fermentation, and bottling, the owner of this vineyard estate wished to build a full-service production and visitor center that would maximize production efficiency, enhance sales and marketing, and reinforce the quality of the wine produced. The team of owner, winemaker, and architect worked closely to develop a master plan. They created a building design sympathetic to the Napa Valley location and flexible enough to accommodate changes in production capacity and winemaking techniques. The result is a facility that successfully integrates landscape, architecture, and winemaking. The building is nestled into a natural hillside, its elegant semicircular shape reflecting the existing contours of the terrain. The design illustrates how gravity can be used as a tool in the winemaking process. Grapes are brought to an upper "crush terrace," then funneled through roof hatches into fermentation barrels below. Visitors are allowed to witness the entire winemaking procedure, starting in the excavated wine cave and finishing in the tasting room and wine library.

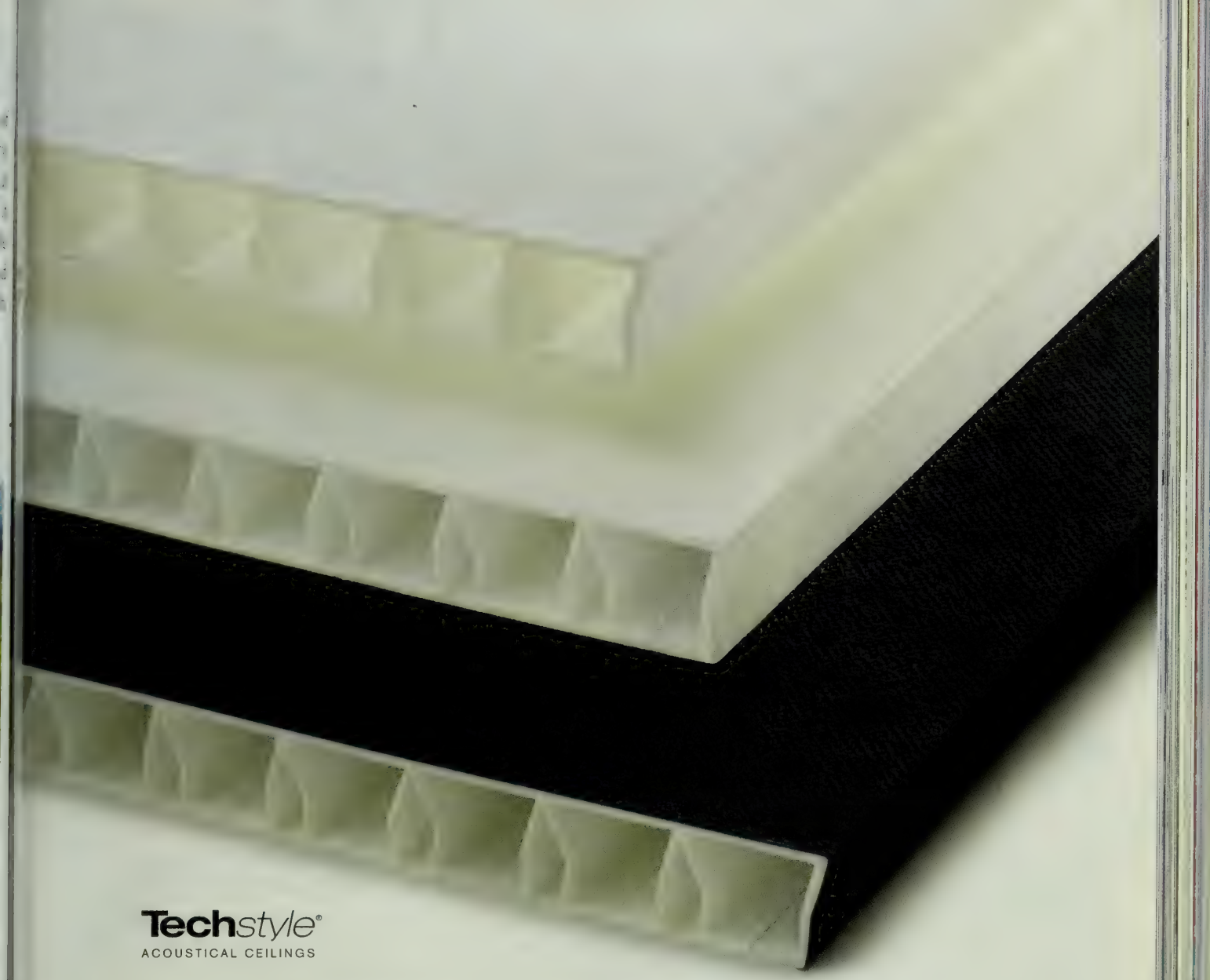








Project: *Quintessa Winery, St. Helena, Calif.*
Architect: *Walker Warner Architects*
Client: *Huneeus Vintners*
Key Players: *Stone Interiors (interiors); Lutsko Associates (landscape); Cello & Maudru Construction (general contractor)*



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FINALIST

AN EDUCATIONAL MISSION IS EXPRESSED WITH STYLISH FINESSE

A campaign to increase fire-safety awareness led to the conversion of a New York City coffee shop into a dynamic fire-safety educational facility. The space, intended for local and traveling visitors, needed to accommodate individuals and groups, provide support areas, room for future teaching technologies, and a gift shop from which important revenue for this nonprofit organization could be generated. The project relies heavily on multimedia—both a fire-truck cab and a video called *The Power of Fire* mark its storefront. Inside, an interactive theater environment creates a visceral learning experience about the lives of firefighters and the devastating effects of fire. Since its opening, more than 250,000 people have visited the facility. Though not originally planned in the design, one wall of the building, now covered with the badges of firefighters who perished on 9/11, has become an impromptu memorial.







Project: *FDNY Fire Zone, New York City*
Architect: *BKSK Architects*
Client: *FDNY Fire Safety Education Fund*
Key Players: *Mediaworks (mixed media and narrative); S. DiGiacomo and Son (general contractor); Lilker Associates (engineering); Weidlinger Associates (engineering)*



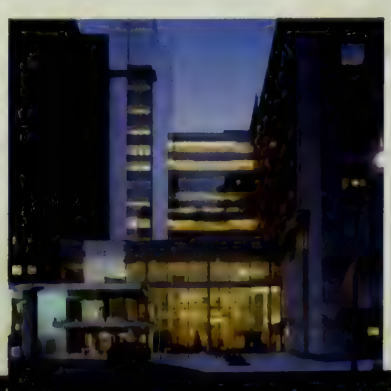
FRESH DESIGN ENHANCES THE QUALITY OF CARE AND COMFORT

The Toronto Hospital, a thriving urban health-care center, wanted to expand its facility to meet its programmatic needs. In a new building centered on a four-story, atriumlike patient court, the hospital was able to replace its imaging and surgical units while integrating the latest protocol and technology. The added space has enabled critical bed care and annual patient admission to increase significantly, and surgical and imaging capacities have also expanded. Most significantly, patients, their families, and staff enjoy relaxing and gathering in the court. The new structure fits nicely into the existing complex—its limestone base is sympathetic to the materials used in the surrounding buildings. Its assertive, contemporary look reflects a signature design and conveys a new institutional identity.

Project: *University Health Network/The Toronto Hospital New Clinical Services Building, Toronto, Canada*
Architect: *Hellmuth, Obata + Kassabaum*
Client: *University Health Network*

Key Players: *EllisDon (general contractor); Rice Brydon Limited Design (interiors); H.H. Angus & Associates (mechanical/electrical); Quinn Dressel Associates (structural); Ferris + Quinn Associates (landscape)*







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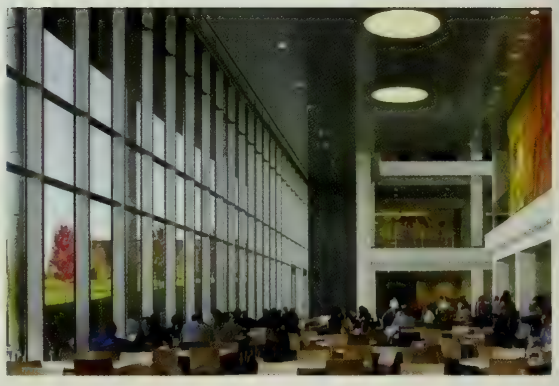
A CORPORATE COMMUNITY IS STRENGTHENED BY GOOD DESIGN

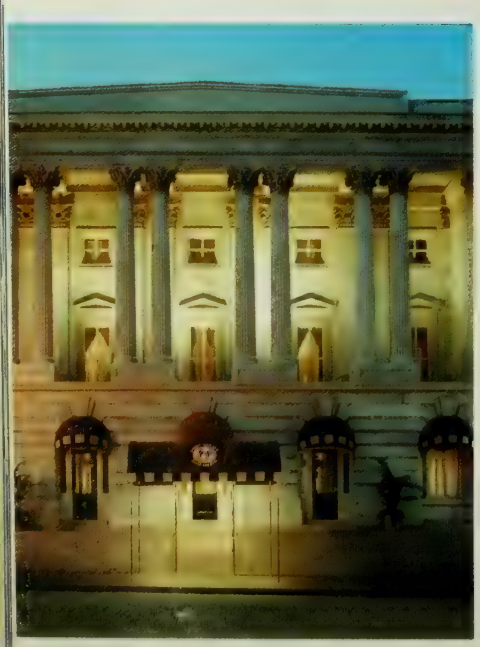
The project team for this corporate headquarters signed a statement at the beginning of the undertaking saying: "We are committed as a collaborative team to create a work environment that promotes innovation, productivity, and a sense of pride in the company." Their project does just that. The design is based on interaction among employees. The Champions Center, the new employee services building, centralizes amenities and serves as a "town center," while a new office building to the west of it creates an unbroken circulation route through the entire corporate campus. The steel-and-glass facades of the new buildings give the headquarters a unified appearance. An elegantly designed atrium, connecting the cafeteria, amenities, and conference center, houses a glass sculpture designed by James Carpenter, frames a 1987 Borofsky sculpture, and opens onto a pond and landscape beyond. Amazingly, the project was completed ahead of schedule and under budget. Its true success is reflected in the positive feedback it is receiving from its employees.



Project: *General Mills, World Headquarters, Golden Valley, Minn.*
Architect: *Hammel, Green and Abrahamson*
Client: *General Mills*
Key Players: *McGough Construction (general contractor); Oslund & Associates (landscape)*







AN ELEGANT ADAPTATION AND UNIQUE COLLABORATION

This project is the result of a unique partnership between the federal government, which sought to restore the Old General Post Office, a national landmark that had fallen into disrepair, and a private developer, who wanted to turn the building, also known as the Tariff Building, into a profitable commercial venture. With guidance from both parties, a design team was able to preserve the structure, reusing it as a 172-room hotel. The main post office area was converted into the lobby, the mail-sorting pavilion became a restaurant, and guest rooms were adapted to preserve the building's historical integrity. Both clients were able to adapt this architectural treasure in a way that allowed for continued community use of the building. This public/private partnership represents a positive investment in a historic Washington, D.C., neighborhood.

Project: *Hotel Monaco (Tariff Building), Washington, D.C. [RECORD, June 2003, page 220]*
Architect: *Michael Stanton Architecture; Oehrlein & Associates Architecture (associate architect)*
Client: *Kimpton Hotel & Restaurant Group; General Services Administration-Portfolio Management*
Key Players: *Cheryl Rowley Interior Design (interiors); Thornton Tomasetti Cutts, formerly James Madison Cutts Consulting Structural Engineers (structural); WEDGCO Engineering (m/e/p); JA Jones/Tompkins Builders, now a subsidiary of Turner (general contractor)*







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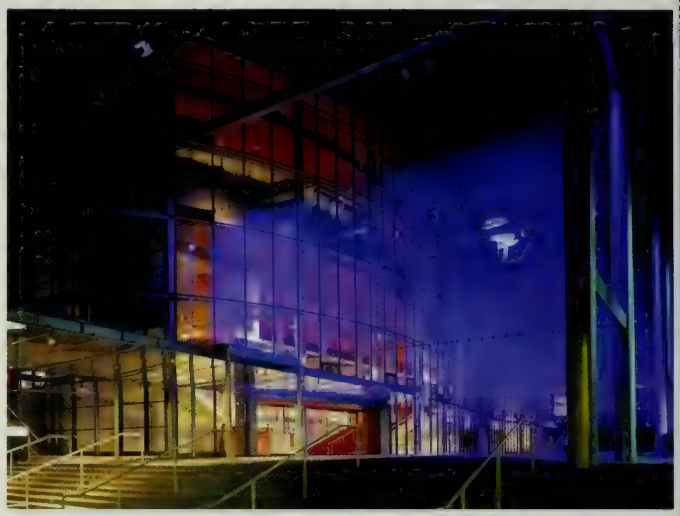
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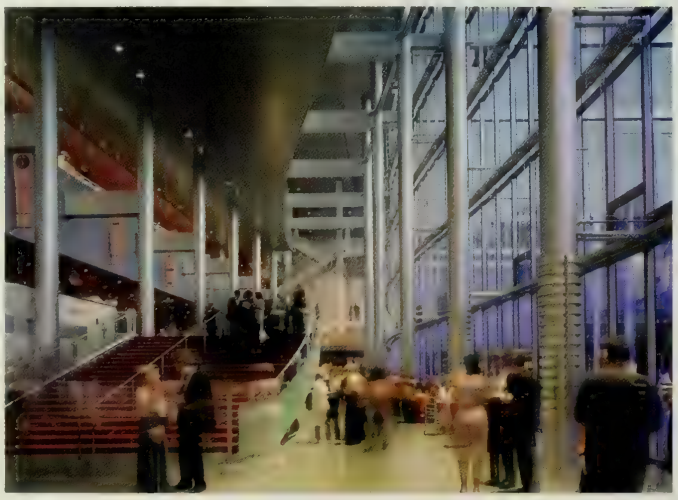
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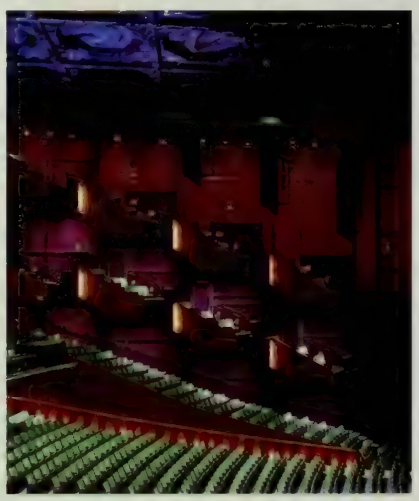
FINALIST

COLOR AND LIGHT BRIGHTEN THIS NEW CULTURAL DESTINATION

The city center campus in Seattle has increasingly become the heart of cultural activity in the region, but the ballet and opera house, built in 1927 and renovated in 1962, lay dormant in this lively area. The city partnered with the ballet and opera companies to create a truly modern performance hall that attracts new visitors and enhances the cultural vision and streetscape of the city. The design team successfully met the challenge of working with multiple clients and providing acoustical integrity, despite a short construction period, renovation challenges, and budgetary contraints. The new space brings the arts to the general public through mesh scrims that reflect the building's vibrancy on the street. The ballet and opera hall has been able to attract world-class talent since its opening, a testament to its success.







Project: *Marion Oliver McCaw Hall, Seattle, Wash. [RECORD, November 2003, page 230]*
Architect: *LMN Architects; Streeter & Associates (associate architect)*
Client: *The Seattle Center*
Key Players: *Skanska, formerly Baugh Construction (construction/general contractor); Sussman/Prejza (interiors); Magnusson Klemencic Associates (structural); CDi Engineers (mechanical); Gustafson Guthrie Nichol (landscape)*



SUSTAINABILITY PROMOTES AN AMERICAN TRADITION

Ford Motor Company needed to build a facility that would reestablish its dominance in its most profitable product line, update its manufacturing process, and position the company for future success. This facility not only reinforces the firm's image, but revitalizes the 600-acre manufacturing site on which it is built. In designing a facility that is environmentally sustainable, Ford created a 21st-century model of manufacturing on an industrial brownfield. A 10-acre "living roof" above the new truck plant will decrease the building's energy cost by 7 percent and improve air quality by 40 percent. A new visitor center allows the community to witness the positive interface between industry and environment that has been achieved.





Project: *Ford Rouge Center, Dearborn, Mich.*
Architect: *William McDonough + Partners (concept design architect and master planner); ARCADIS (architect, Dearborn Truck Plant)*
Client: *Ford Motor Company and Ford Motor Land Development*
Key Players: *Walbridge Aldinger (general contractor); ARCADIS (engineering); HarleyEllis (landscape)*



It's a heady time

to be an architect. Buildings have never been more prominent in the headlines or in the mind of the public. Projects like the Freedom Tower or Terminal 2A in Paris appear regularly in the mainstream press. But as architecture reestablishes its place in the public eye, the challenges facing architects themselves remain firmly in place.

Every architect knows well the side of our industry the public rarely sees: contentious relationships between architects and contractors, missed budgets and schedules, the wasteful nature of construction itself. Each of these problems is a failure of communication: the inability to describe, transmit, and properly integrate ideas. The myriad decisions that yield a building today are supported by the tools of yesterday, tools ill suited to the complexity of the problem.

Using technology to integrate the building process through communication of ideas will solve many of these challenges. Today's technology offers opportunities to create, manage, and share high-quality design information. The ways that buildings are conceived, evaluated, fabricated and constructed will change, and technology is already the catalyst.

At this year's Venice Biennale, the U.S. Pavilion exhibition, entitled *Transcending Type*, demonstrates how powerful architectural ideas can transform even the most common building types. Innovative design aimed at solving prosaic problems proves that architects can bring real value to the challenges of building today. Dramatic process changes made possible through technology are critical to bringing these visions to reality — and keeping architecture and architects truly important.

Phillip G. Bernstein, FAIA
Vice President
Autodesk Building Solutions Division

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Autodesk is proud to sponsor *Transcending Type* at the 2004 Venice Architecture Biennale.

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FINALIST

COMMERCIAL SUCCESS FUSES WITH OLD WORLD CHARM

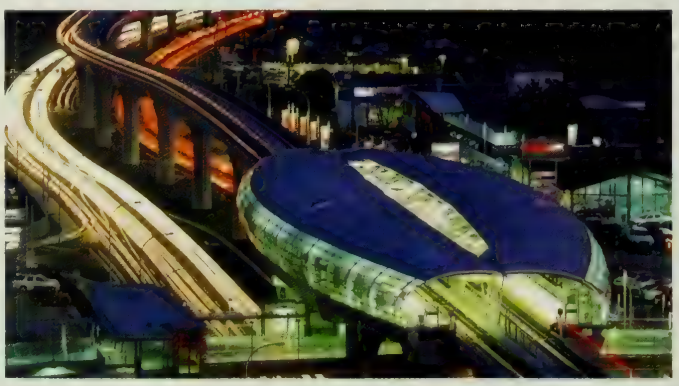
How do you reinvent a landmark building? With the destruction of the freeway that separated the San Francisco Ferry Building from the the city, the client saw an opportunity to restore the building as a transportation, retail, and office center, attracting the community to the waterfront. The design meticulously restored the building's original architectural elements, while incorporating new uses. The restoration of a 600-foot-long passenger concourse or nave exists as the core of the project. Office space that had been added in the 1950s was removed and large openings were cut into the second floor, bringing light and vibrancy to the ground level. The client and design team turned to 19th-century European arcades and department stores as models, bringing local artisans and restaurants to the marketplace. Both a 100 percent lease-rate and a 12.5 percent increase in ferry use per year indicate success.







Project: *San Francisco Ferry Building, San Francisco [RECORD, November 2004, page 164]*
Architect: *SMWM; Badauf Catton Von Eckartsberg (retail architect); Page & Turnbull (preservation architect)*
Client: *Port of San Francisco; Wilson Meany Sullivan; Equity Office Properties*
Key Players: *Plant Company Construction (construction); Rutherford & Chekene and Structural Design Engineers (structural); Anderson, Rowe & Buckley (mechanical)*



STIMULATING FORMS CONVEY THE INNOVATION BEHIND THIS DESIGN

With the dual goals of encouraging public transportation and creating a dynamic transit hub for future expansion initiatives, the design team developed a sleek platform and elevated station, accessed by a pedestrian bridge. Shaped like a swell that tapers at each end, the form of the station reflects the movement of the skytrain. Composite wood-and-steel ribbing brings warmth to the structure, and the use of glass and an open-plan design provide transparency and security. Large overhangs protect riders from rain and wind, and bicycle storage and easy access to connecting bus service offer conveniences for commuters. The project is visually stunning on both the interior and exterior, and it has become a model of achievement for future stations along the expanded rail line.

Project: *Brentwood Skytrain Station, Burnaby, Canada [RECORD, January 2003, page 104]*
Architect: *Busby + Associates Architects*
Client: *Rapid Transit Project 2000*
Key Players: *Dominion Construction (construction); Fast & Epp Partners (structural); Klohn Crippen (mechanical); Durante Kreuk (landscape); AGRA Simons (electrical)*





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Scheduled to open in 2005, this satellite operations facility will provide global environmental data for weather predictions and distress signals. In light of the clients' environmental stewardship, the plan emphasizes open space, minimizing the presence of the building by concealing it within the natural contours of the site. The entire support program is submerged into the landscape, reducing the building's mass by two thirds. Collaboration among the design team, client, and tenant allowed for this sustainable project to both meet the complicated technical needs of the facility and its antennas, and respond to the environmental needs of its users.



Project: *Satellite Operations Facility & Administrative Offices, Suitland, Md.*
Architect: *Morphosis/Einhorn Yaffee Prescott*
Client: *General Services Administration*
Key Players: *3DI (construction); Cagley & Associates (structural); EDAW (landscape); P.J. Dick (general contractor)*



A HISTORIC STRUCTURE ANCHORS A MODERN COMPLEX

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Project: *Montclair Lofts, Miami Beach, Fla.*
Architect: *Oppenheim Architecture + Design*
Client: *Covin Development*
Key Players: *Vidal + Associates (engineers); De Los Reyes Engineers (engineers); Rosenberg Gardner Design (landscape); Max South Construction (general contractor)*



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Ten distinguished jurors evaluated and visited the **winners and finalists** of this year's program

Moshe Safdie, FAIA, Jury Chair



Moshe Safdie established his practice in 1964, following an apprenticeship with Louis Kahn. His first project was Habitat '67, the pioneering cellular housing complex. In 1978, after teaching at Yale, McGill, and Ben Gurion universities, Safdie became

"WHEN CLIENTS AND ARCHITECTS COLLABORATE CREATIVELY WITH MUTUAL RESPECT, GREAT THINGS CAN HAPPEN."

director of the Urban Design Program and the Ian Woodner Professor of Architecture and Urban Design at the Harvard Graduate School of Design. He recently completed the Vancouver Public Library in Canada and the Skirball Cultural Center in Los Angeles. He is currently working on two airports: the Lester B. Pearson International Airport in Toronto and the Ben Gurion International Airport in Tel Aviv. He has been honored with the Gold Medal of the Royal Architectural Institute of Canada.

Betsy Z. Cohen



Betsy Cohen founded Jefferson Bank in 1974 and served as its chairman and C.E.O. for 25 years. Cohen sold the company, and in 2000 she founded the Bancorp Bank, a virtual bank serving small- to midsize businesses in the Philadelphia-Wilmington area. She is the chairperson and C.E.O. of RAIT, a real estate investment trust that provides specialty financing to owners of commercial real estate. She sits on the boards of Aetna U.S. Healthcare, Corporate Office

"THE BW/AR AWARDS ALLOWS US TO SEE ARCHITECTURAL DESIGN AS THE PROTAGONIST OF EXCELLENT BUSINESS PRACTICE AND ENHANCED FUNCTIONALITY."

Properties Trust, Maine Merchant Bank, the Philadelphia Museum of Art, and Bryn Mawr College—her alma mater.

Rand Elliot, FAIA



As principal, lead designer, and founder of Elliott + Associates, Rand Elliott oversees every aspect of the firm's design process. He believes that each project directly reflects the client's personality or business goals. He is known for designing projects that not only "fit" their respective sites but seem literally to

"TOGETHER, ARCHITECTURE AND BUSINESS ILLUSTRATE THE POWER OF VISION AND PURPOSE."

"grow" from them. Since its inception in 1976, Elliott + Associates Architects has received 158 international, national, regional, and local awards, including two Business Week/Architectural Record Awards. The firm is the only architectural firm in the state of Oklahoma to win a national AIA Honor Award, and in 1988, the Central Oklahoma Chapter of the AIA honored the practice as Firm of the Year. Elliott received his B.Arch. from Oklahoma State University.

Douglas Gardner

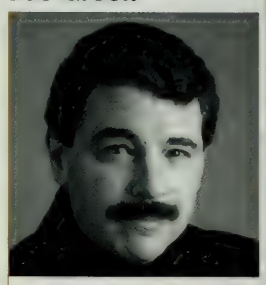


Douglas Gardner is a consultant specializing in land use, planning, and project management. Formerly, he was president of the Urban Development Group with Catellus Development, where he was responsible for major mixed-use projects, including Mission Bay in San Francisco. Prior to that, he was an associate partner with the architec-

"THE QUALITY AND QUANTITY OF SUBMISSIONS BY GOVERNMENT AND NOT-FOR-PROFIT CLIENTS IS IMPRESSIVE."

tural firm of I.M. Pei & Partners, and he is a graduate of Yale University and the Yale School of Architecture. Gardner serves on the advisory boards of the Trust for Public Land and the Audubon Society, and he is a past president of the Los Angeles Conservancy.

Lee Green



In his 24-year career with IBM, Lee Green has held numerous design and management positions. Recently, he played a pivotal role in branding and design initiatives, including the launch of IBM's e-business identity program, the new technology branding program, and the redesign of IBM's desktop, mobile, and server products. He is also responsible for IBM's worldwide product industri-

"THE GREAT THING ABOUT THE AWARDS PROGRAM IS THAT IT FOCUSES ON EXCELLENCE FROM THE PERSPECTIVE OF THE USER, OR OCCUPANT."

al design, identity programs, graphics, packaging, and Internet design. Green has an undergraduate degree in design from Temple University and an M.A. in design from Rochester Institute of Technology (RIT). He has taught and lectured on design at Stanford University, Harvard, MIT, and RIT. He currently serves on the board of directors and as advisory board president for the Design Management Institute; he is also a member of the advisory board of RIT.

Paul Herzan



Paul Herzan serves as president of the board of trustees for the Smithsonian Institution's Cooper-Hewitt, National Design Museum, the only museum in the United States devoted exclusively to historic and contemporary design. At the museum, Herzan chairs the

"I AM HONORED TO BE INVOLVED IN AN AWARDS PROGRAM THAT RECOGNIZES INNOVATIVE DESIGN IN A BUSINESS CONTEXT."

executive committee and sits on all other committees. He is also a director of the Lily Auchincloss Foundation and a trustee of the New York Landmarks Conservancy. Currently, he is consulting on an incubation project to redesign the New York City taxicab in conjunction with the 2007 centennial of its founding.

Frances P. Huppert, FAIA



As senior vice president of design and construction for the Empire State Development Corporation (ESDC), Frances Huppert supervises all aspects of project development, from planning and urban design to programming and construction. Under her tutelage, innovative technologies, sustainable design, cost efficiency, and client and architect partnering have become priorities in

"IT IS GRATIFYING TO SEE THE MERGING OF HIGH-QUALITY DESIGN WITH PUBLIC PURPOSE."

ESDC's projects. Huppert is a recipient of the 1997 AIA Public Architects Award. She is the current chair of the 2004 AIA New York Chapter Fellows Committee.

Marianne McKenna



A founding partner of Kuwabara Payne McKenna Blumberg Architects (KPMB) in Toronto, Marianne McKenna has provided leadership for many of the firm's award-winning projects. With a focus on civic architecture and the development of public spaces, KPMB's designs make strong contributions to the identity and vitality of their urban context. McKenna's completed projects include the Ettore Mazzoleni Concert Hall at the Royal Conservatory of Music in

"THIS AWARD DEMONSTRATES THE SYNERGY OF GREAT DESIGN AND BUSINESS PRACTICE."

Toronto and the Jackson-Triggs Niagara Estate Winery in Niagara-on-the-Lake. She has taught at McGill University in Montreal and the School of Architecture at the University of Toronto. She has been a lecturer and guest critic at universities including Yale, Waterloo, Carleton, and McGill.

Paula S. Wallace



Paula Wallace is president and cofounder of Savannah College of Art and Design, the largest art and design college in the U.S. She not only develops the curriculum but serves as curator, art collector, philanthropist, designer, and author. Her leadership at the college has produced a unique environment. Wallace created such successful events as the Sidewalk Arts Festival and

"THE ARCHITECT'S ROLE IS TO FULFILL CONVENTIONAL FUNCTIONS WITH CHOICES OF ENGAGEMENT OR TRANQUILITY."

the Savannah Film Festival. She was named the 2004 Ernst & Young Entrepreneur of the Year for the Southeast region, and she serves on the advisory board of the National Museum of Women in the Arts, Washington, D.C.

Allison G. Williams, FAIA



A principal at Ai, a 115-person architecture and interiors firm, Allison Williams's recent projects include the Richmond Civic Center Master Plan, in California, and the African American Cultural Center of Pittsburgh. Prior to Ai, Williams was an associate partner with Skidmore, Owings & Merrill in San Francisco. She serves on the University of California,

"MANY OF THE PROJECTS COORDINATED PUBLIC AND PRIVATE FUNDING AND SOCIALLY AND CULTURALLY MOTIVATED INTERESTS."

Berkeley Capital Planning Design Review Committee, the board of directors for the Museum of the African Diaspora and the Exploratorium, both in San Francisco, and she is on the *Harvard Design Magazine* advisory board. She earned a B.A. in art and an M.Arch. from the University of California, Berkeley. She was a Loeb Fellow at the Harvard Graduate School of Design.

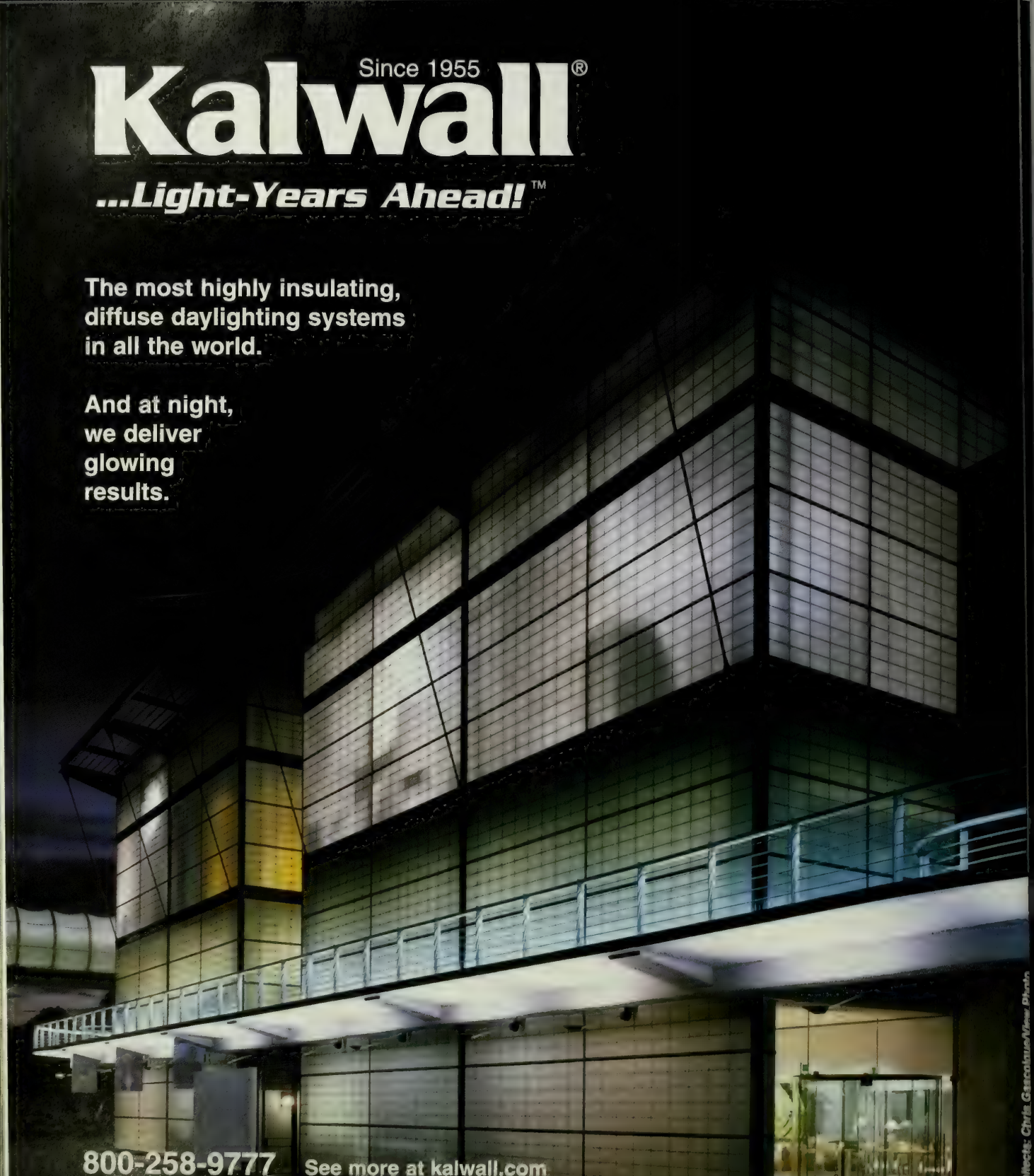
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Santiago Calatrava's Lyrical Crossings

Photography by Alan Karchmer

In the Cittern Bridge (opposite), intersecting spans are suspended from one mast. The Lute's single mast (below) supports a pair of curving spans that form a rotary.



In the quintessential Dutch landscape of the Haarlemmermeer district, southwest of Amsterdam, Santiago Calatrava has designed three bridges over the Hoofdvaart Canal. Named for musical instruments—the Harp, Cittern, and Lute—each is a deftly sketched variation on a structural theme. In the changing environment of this rapidly developing area, the bridges will soon become urban landmarks. These photographs allow us to see them in the beauty of their pastoral agricultural setting.



The bridges rise out of the flat landscape,

) soft light and powerful sky of an approaching
rm reveal the delicate equilibrium of the Harp
dge (opposite, viewed from the north, and below,
m the south). The mast is poised in space,
ggesting that it is held in suspension by the span.



dramatically piercing the Dutch sky.

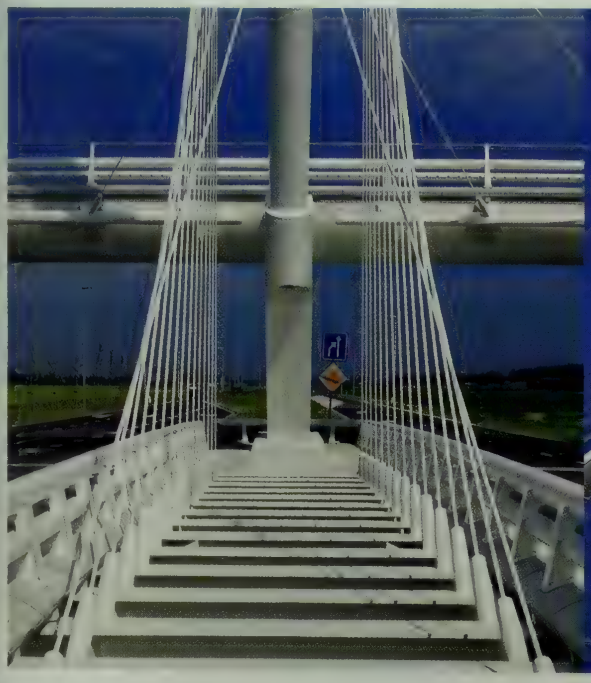


The Harp Bridge's mast soars over parallel roadways.

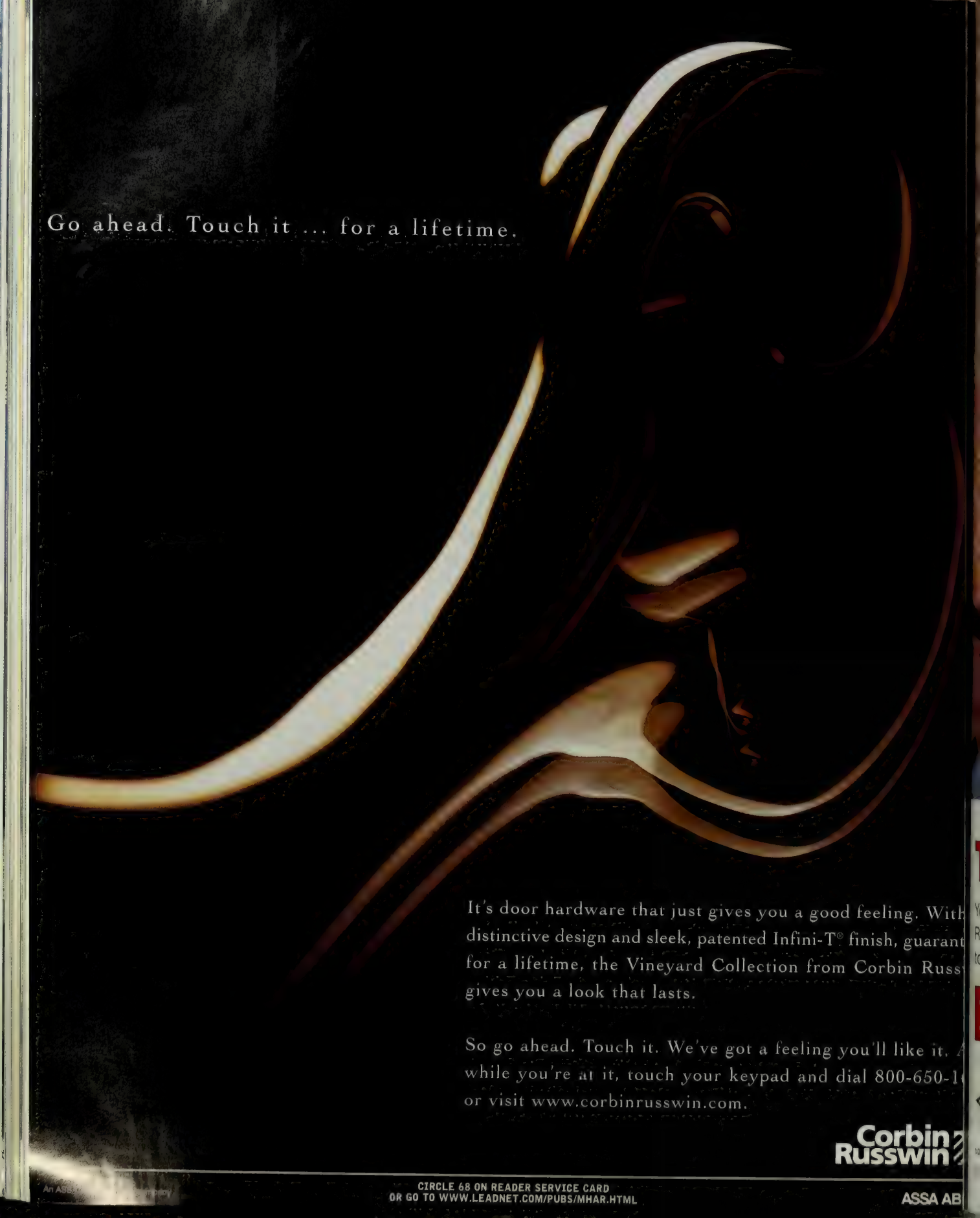
The three sister bridges (below, from left to right), the Harp, Cittern, and Lute, are harbingers of change to come to this fast-evolving corner of Holland.

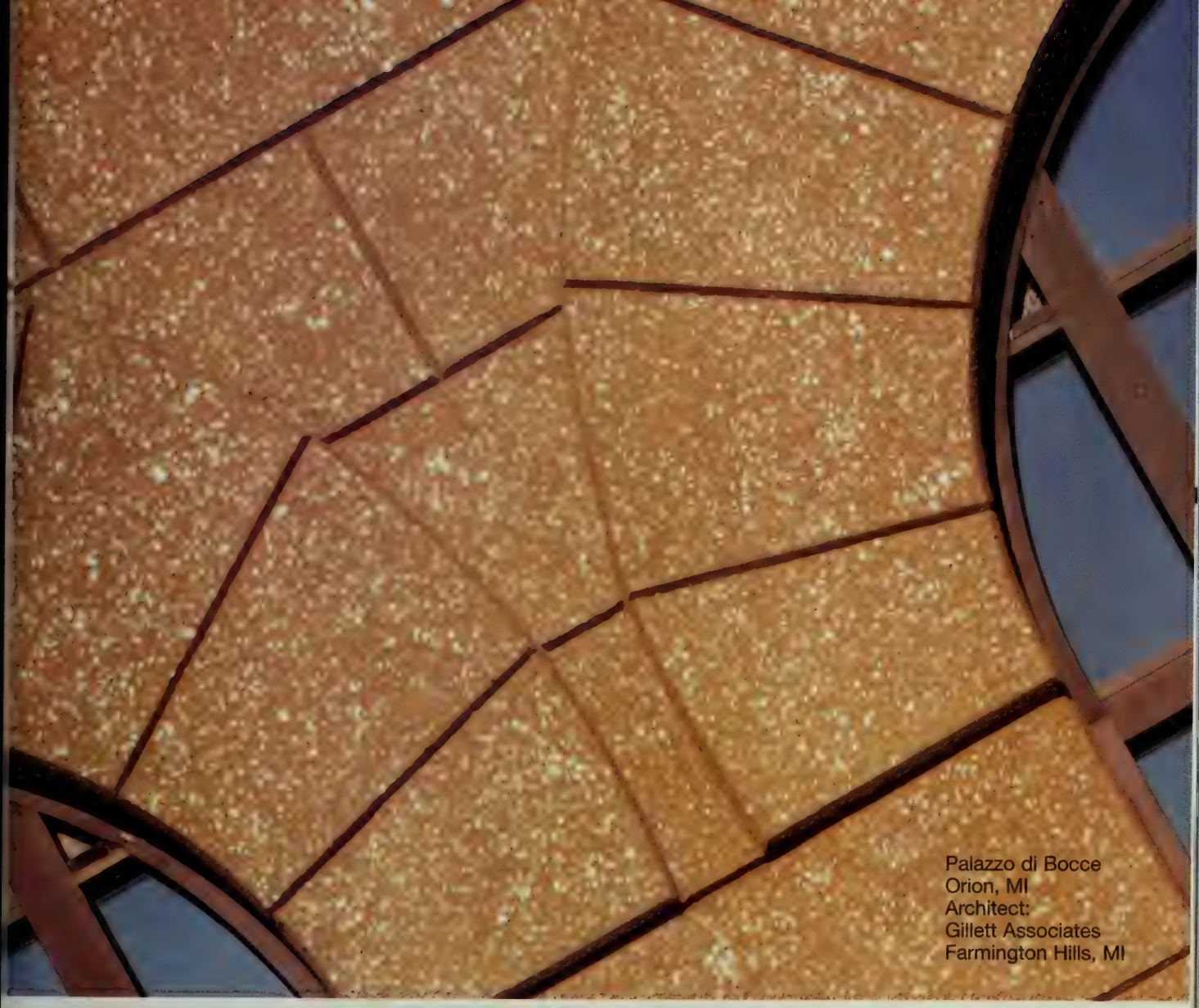


Cables and masts draw bold geometric forms in the air.






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The tower required new seismic bracing, while the deteriorated state of the building necessitated opening the roof for replacement.

PROJECT DIARY Surviving controversy, SMWM's quiet mix of old and new has returned San Francisco's FERRY BUILDING to the center of urban life



By John King

Every city has a building like San Francisco's Ferry Building. It's a landmark, but long ago lost much of its reason for being. Still, everybody loves it so much, no one can agree on what to do with it. In the Ferry Building's case, it took almost 25 years of trying. Along the way, partisans disagreed about the degree to which restoration had to be true to the past or recognize the future. Architect SMWM's solution isn't a pure gesture of architectural bravado, but cedes the spotlight to an intriguing mix of uses. The Ferry Building manages to frame a unique urban life. John King tells how it happened. Oh, and you can still catch a ferry. James S. Russell



The Ferry Building was once a major transportation hub (above) delivering passengers to an elegant nave (left).

1898–1959: A landmark rises and falls—into disuse

As the dawn of the 20th century approached, San Francisco had become the ninth-largest city in the nation, but it sat atop a peninsula with no bridges—just a makeshift ferry depot described by port officials as "a wooden shed in front of an assortment of small buildings." To rectify this, state voters in 1892 approved a $600,000 bond to build an ornate terminal at the foot of Market Street. San Francisco architect A. Page Brown designed a three-story, sandstone-covered structure adorned with Corinthian columns and an arched colonnade. Its 245-foot-high clock tower, modeled after the Giralda tower of the Cathedral of Seville, Spain, made the terminal an instant landmark, punctuating the vista from the city's most important boulevard.

Brown died before the start of construction—after being thrown from his horse—but on July 13, 1898, the first ferryboat pulled along one of the new terminal's gangways. Commuters poured into a second-floor hall underneath a 660-foot-long nave illuminated by skylights that ran the length of the building. Its tile mosaic floors included an image of the Great Seal of California.

The Ferry Building withstood San Francisco's devastating 1906 earthquake. Traffic burgeoned to 100 million annual passengers as the city grew. But when the Bay and Golden Gate bridges opened within six months of each other in 1936, this icon became instantly obsolete.

Most ferry service vanished by 1941. A 1950s renovation filled the building with modern office space, but at high cost: An additional floor was crudely inserted into the great nave and the bay facade was "modernized" beyond recognition. The thick concrete lines of the Embarcadero Freeway cut the Ferry Building off from Market Street in 1959, leaving only the clock tower visible.

John King is the urban design critic for the San Francisco Chronicle.

Project: *The Ferry Building, San Francisco*
Architects: *SMWM (lead)—Cathy Simon, John Long, Dan Cheetham, Andrew Wolfram, Eva Belik, Scott Ward, Dick Potter; Baldauf Catton Von Eckartsberg Architects (retail); Page & Turnbull (preservation)*
Consultants: *Rutherford & Chekene, Structural Design Engineers (structural engineers); Anderson, Rowe & Buckley (mechanical, plumbing engineers); Decker Electric (electrical)*
Contractor: *Plant Construction*



As construction proceeded, surprisingly little of the original Ferry Building fabric proved salvageable. A continuous second-floor bay was added on the water side.

1980: A grand plan

The Port of San Francisco, seeking to revitalize the city's now-derelict downtown waterfront, chose a developer who proposed to make the Ferry Building a centerpiece of a vast festival marketplace that includes piers to the north and south. The project's size—internationally themed shops opening onto an outdoor dining arcade with a historic pier turned into a parking garage—sparked fierce public opposition, prompting lawsuits on both sides of the deal. The legal battle took 11 years to resolve. During those years, the building housed the port's offices and a world trade club but continued to deteriorate. In 1991, the Embarcadero Freeway was razed after being damaged by the 1989 Loma Prieta Earthquake, restoring the terminal's prominence in the cityscape.

1998: The port tries again

Developers were again asked to submit proposals for reviving the faded jewel as the "elegant centerpiece of the waterfront." The winning team included Equity Office Properties Trust, the nation's largest commercial landowner, and Wilson Meany Sullivan, a San Francisco developer that specializes in small retail projects. The firm of SMWM (Simon Martin-Vegue Winkelstein Moris) headed the architectural design effort in collaboration with Baldauf Catton Von Eckartsberg Architects and preservation specialists Page & Turnbull.

Among a field of four contenders, the team stood out for its detailed vision of a building packed with uses that went beyond the usual offices and stores to include a marketplace oriented to local food producers and a prominent role for an ongoing farmers market.

The architecture proved equally important; no other developer proposed to fully restore the skylit nave. The team also intended to cut two long openings through the historic tile mosaic of the second floor so that daylight, filtered by the elegant tracery of the nave's trusses, could pour down to the ground-level marketplace—formerly storage space—from skylights.

Privately, lead architect Cathy Simon imagined cladding the offices on the second floor with a mullionless wall of glass, a crisp, contemporary note to give the much-altered bay-facing side of the building a dramatic new presence.

2001: What deserves preservation?

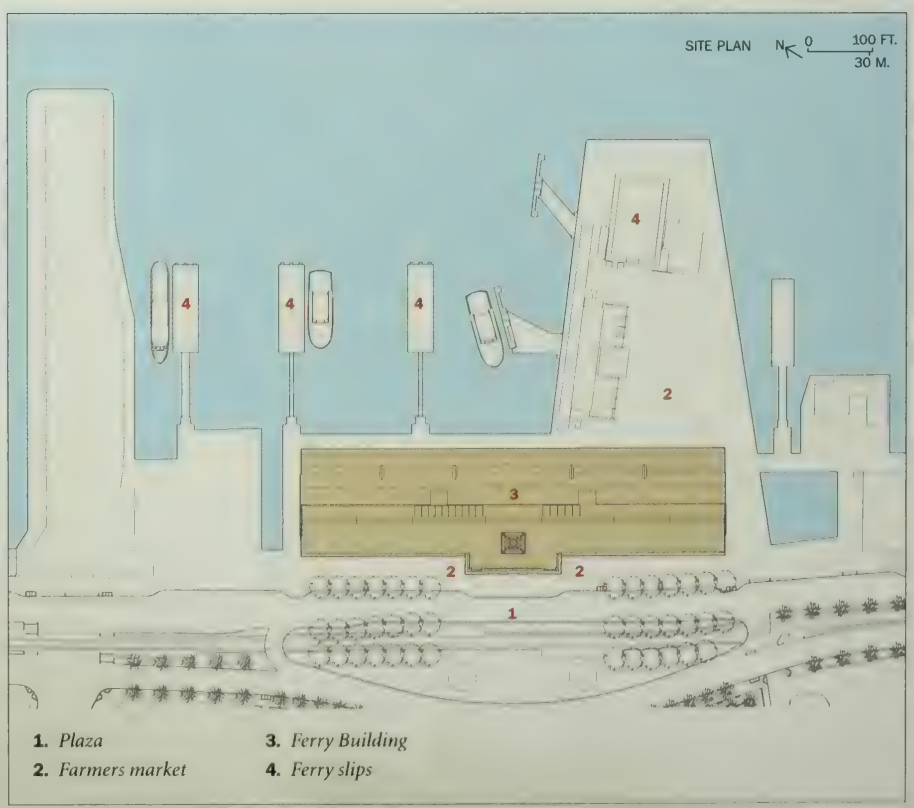
In a city that vocally treasures its landmarks, these changes provoked controversy. To bring daylight down to the marketplace, the developers wanted to remove seven bays of the nave floor on each side of the state seal, creating two 30-foot-by-210-foot-long incisions; regulators at the state Office of Historic Preservation wanted each cut limited to three bays, or 90 feet. And since the project financing scheme included preservation tax credits, official blessing was essential.

The team appealed to National Park Service officials in Washington. After a contentious hearing, recalls Jay Turnbull, "they said 'we'll offer you five [bays],' and everyone took it. By then, nobody wanted to jeopardize the outcome."

By the time construction began in March, it had become clear that alterations over the decades had left little usable original material. The graceful arches in the nave, for instance, are refaced in 22-foot-high panels made of glass-fiber units cast by molding a surviving arch.

The final design of the bay facade is far more conservative than Simon had wished. There are modern touches—a metal-clad second-floor addition cantilevers out 10 feet above a new waterfront promenade (page 173)—but the overall look is restrained.

Besides worries that a conceptually daring glass wall would rile preservationists already wincing at the second-floor incisions—why pick



1. *Plaza*
2. *Farmers market*
3. *Ferry Building*
4. *Ferry slips*

After new seismically beefed-up framing was installed (below), the great arches were rebuilt with replica units over a new slab (above).





The architects installed bridges to unite upper-level office spaces. New tile-mosaic flooring recreates the old pattern (including the state seal) of what was once the concourse.

Commentary: Playing It Safe Pays Off







Tenant architects played off the building: law offices for Coblentz, Patch, Duffy & Bass, by Aston Pereira (top), and for Stone & Youngberg, by Studios (above left); the Slanted Door, by Lundberg Design (right).

The $100 million restoration of the Ferry Building is so successful because old and new are fused in such a way that they can't be separated—and the whole is greater than the sum of the parts.

That's no easy accomplishment for a building that retained such a strong hold on Bay Area imaginations, even in its faded decades of irrelevance. It symbolized the glories of the city-that-was, though modern office towers dwarfed it and freeways drew people well beyond San Francisco's rugged peninsula. Its elegant campanilelike tower still draws the eye away from the much taller buildings nearby.

The triumph is even more striking in light of how many hands tinkered with the project along the way: port officials, state regulators, and historic-preservation officials all left their imprint on the final result, as well as an array of private interest groups ranging from bicyclists, who wanted to be able to walk their bikes through the building, to leaders of the Bay Area food scene, who wanted proof that the developer wasn't trying to pull a fast one and slide a predictable list of franchises in at the last minute. All this could have compromised the final product; instead, it made it stronger.

But the restoration does more than polish up an icon; it has spawned new urban life that is utterly in sync with today's Bay Area. Besides paying tribute to the past, and giving visitors access to the water via a 30-foot-wide promenade between the landmark and the bay, the Ferry Building serves as a catalyst. The marketplace, enhanced by the farmers-market stalls, embodies a local ethos. Here the purchase of a round of cheese (ideally from local goats fed organic grain and free to roam on land preserved from sprawl) is a cultural statement.

The basic architecture of the space defers to the tone set when the building opened in 1898. The low-key contextualism of the new retail space has columns and arches cloaked in yellow quarry tile. But the concrete floor, a contemporary note, with the exposed structural beams above, is an unpretentious chaser. Similarly appealing are the metal grates that fold back and remove the need for storefront doors and windows.

What catches the eye is the colorful clutter within the wide-open storefronts: wicker baskets filled with red onions, dried herbs hanging from a trellislike ceiling, the festive blade signs that display oversize mushrooms or a dour-looking fish.

The controversial idea to cut through the second floor to tie the interior together is a revelation rather than a sacrilege: The incision unveils the long-hidden truth that this former terminal is an urban structure. It is designed to be part of the working city, to hum with activity and life.

As for the discarded notion of a glass wall facing the water, both sides are right. The contemporary detailing that Cathy Simon wanted could perhaps have resulted in a wonderful juxtaposition between past and present—especially since what took shape instead is demure to a fault. But the Ferry Building isn't about the waterside facade. It is about the overall experience of place, and now the triumphant return of urbanity to the bay.

Yes, San Francisco is a city that for all its emphasis on personal freedom frequently throws a dull blanket on architectural expression. Contextualism is too often valued more than creativity. But in this case, playing it safe paid off. *J.K.*

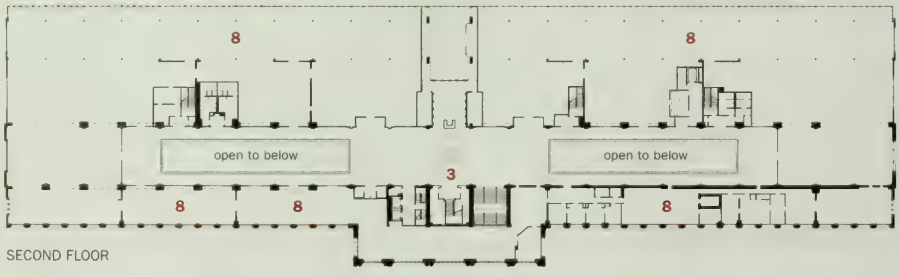
New openings in the floor bring daylight to the marketplace, which features locally produced foods.



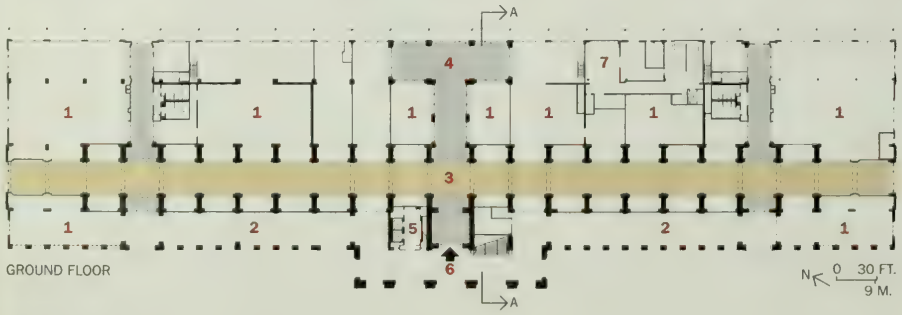

The two floors of office space—the public areas drenched in the city's diffused light—remain serene above the retail bustle. They traded well in a slow
office market. Being able to buy a dozen kinds of olive oil just a floor away may be more of an attraction to tenants than leasing agents ever suspected.


PORT OF SAN FRANCISCO



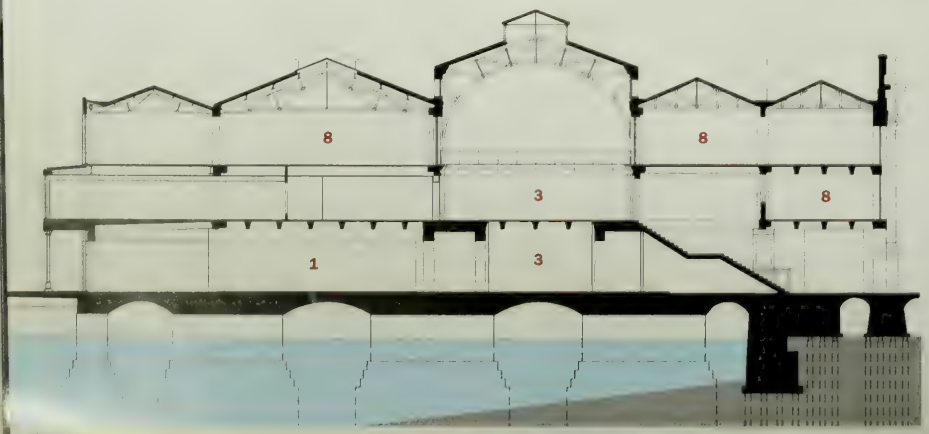


SECOND FLOOR



GROUND FLOOR

N 0 30 FT. 9 M.



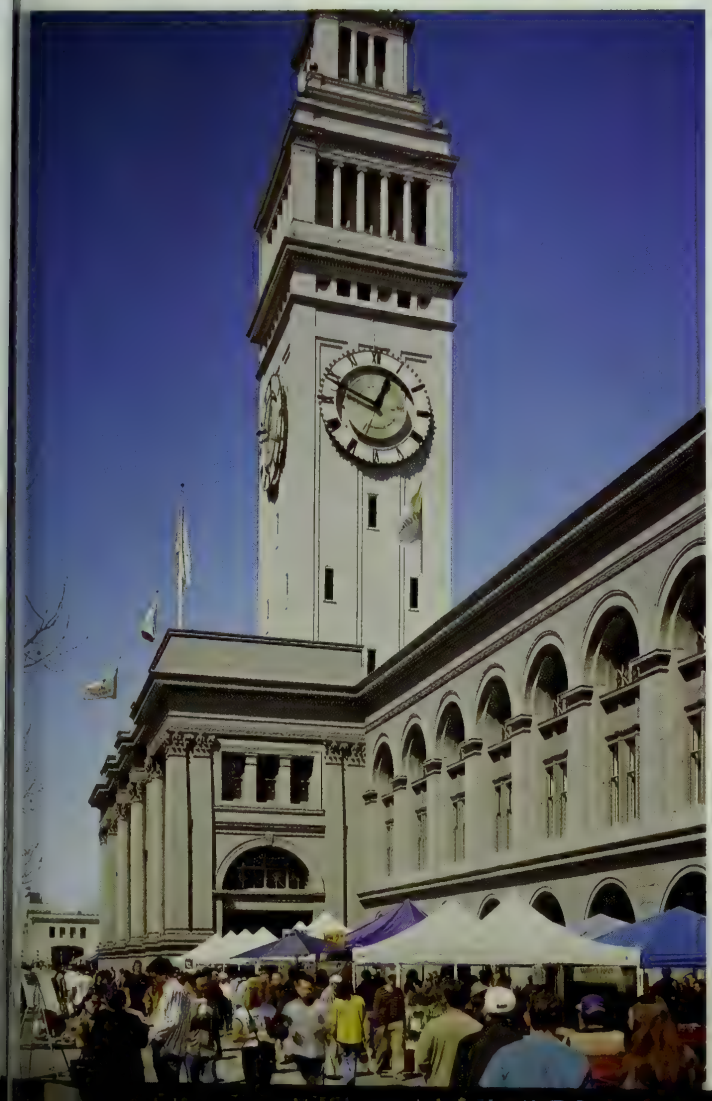
0 10 FT. 3 M.

The restored building faces a new light-rail line installed where an elevated freeway once ran (above). Four days a week, the structure provides a dignified backdrop to a lively farmers market. It wraps both the city-facing side (opposite, bottom) and the water side (opposite, top two).

1. *Marketplace*
2. *Farmers market*
3. *Nave*
4. *Ferry waiting*
5. *Office lobby*
6. *Main entry*
7. *Loading*
8. *Office*







another fight?—the developers worried that the juxtaposition of old and new wouldn't click. "When something like that is done perfectly, it's the best thing in the world," project manager Chris Meany says, mentioning Norman Foster's transformation of the Reichstag in Berlin. "Even slightly trading down results in a cold, antiseptic space." Simon now calls the decision to play it safe "my biggest disappointment," adding, "Here is a building that bookends the 20th century, so why not have the best contemporary expression from then and now?" But Meany has no regrets: "I finally realized that we're not about creating an intellectual study for architects. It's about creating a place where the average Joe will say, 'wow, this is wonderful.' "

2004: Will it work?

In the two years between the start of construction and the soft opening in the summer of 2003, San Francisco office rents plunged while vacancy rates climbed past 20 percent. Retailers grew skittish after the September 11 terrorist attacks. But today the office and retail space is fully leased, and it is clear that the commercial mix and the architectural merging of old and new have created a compelling waterfront magnet. Locals as well as tourists are drawn by the old icon's new shine—and a ground-level scene that emphasizes Bay Area food producers and restaurateurs.

There were glitches, inevitably: Health inspectors blocked plans to give fully open-air access from the marketplace to the farmers market, citing a prohibition on the 'outdoor' sale of meat and fish. No matter. For the first time in more than 50 years, the Ferry Building has again become a bustling presence in the daily life of San Francisco. ■

Sources

Exterior cleaning/repair: *Prosoco*
Roofing: *Certainteed; Lawson*
Windows: *Woodworks (wood); AGA, PPG, Carvist (aluminum)*
Storefronts: *Architectural Glass and Aluminum; Vistawall*
Glass-fiber panels: *Kreysler*
Tile: *Quarry Tile*
Window treatment: *Mechoshade*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

Kazuhiro Kojima + Kazuko Akamatsu/C+A and Arata Isozaki & i-NET create a luminous structure for the LIBERAL ARTS AND SCIENCE COLLEGE on a new campus in Qatar



By Naomi R. Pollock, AIA

You can't take Qatar to the American university, but you can take the American university to Qatar. So thought the oil-rich country's Foundation for Education, Science and Community Development when it decided to build the 2,400-acre Education City in 1997 at the edge of the nation's capital of Doha. In order to provide top-notch education for this Islamic country on the Persian Gulf, the foundation decided the complex should be composed of branches of existing highly respected institutions, rather than trying to start a new university from scratch. So far, American universities such as Carnegie Mellon, Virginia Commonwealth, and Texas A&M, and Cornell University's Weill Medical School have become involved. Each school in the new complex is to be housed in its own architect-designed building, and all tied together with a master plan by Arata Isozaki + i-NET. The 391,410-square-foot Liberal Arts and Science College building, designed by the Tokyo firm Kazuhiro Kojima + Kazuko Akamatsu/C+A, is among the first to be completed. An appropriate launch for the entire development, the structure houses a liberal arts college affiliated with Texas A&M, as well as the Academic Bridge Program, a language program where students from all over the Arab world brush up their English before moving on to other disciplines.

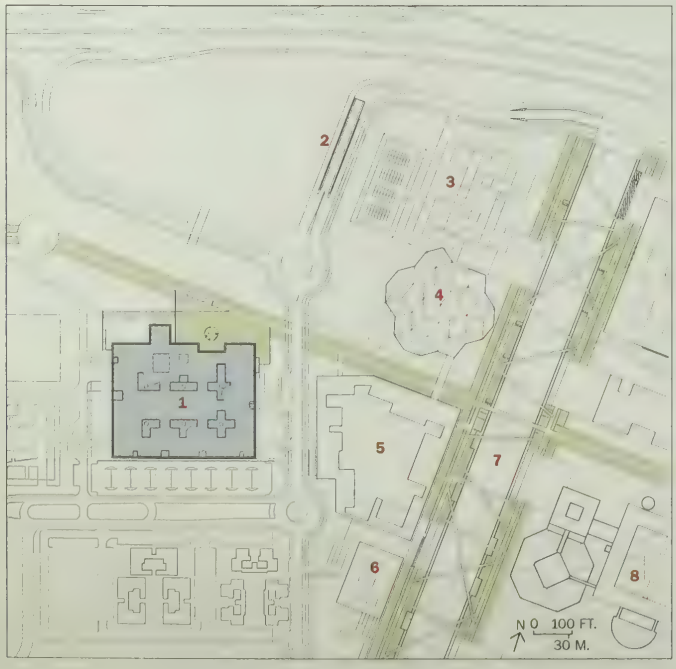
A self-contained square, the Liberal Arts and Science College building begins with a parking garage submerged partly below grade, on top of which sit two floors, each consisting of spaces with assigned functions or flexible ones. The first floor, seen as the center of student life,

Naomi R. Pollock, Special International Correspondent to RECORD, *writes about architecture and design from Tokyo.*



Openings in the first layer of the double-skinned exterior are backlit at night to bring out the luminous geometric pattern.





1. *LAS building*
2. *Ceremonial gate*
3. *Qatar Foundation*
4. *Central library*
5. *Student center*
6. *Faculty club*
7. *Green spine*
8. *Engineering*

contains classrooms of various shapes and sizes interspersed with the flexible learning areas where students can study or socialize. Upstairs, faculty offices ring the perimeter, while informal meeting areas where students consult with their professors and teaching assistants fill the interior. Three circular lecture halls and double-height atria, or covered "patios," penetrate the horizontal planes of the two floors.

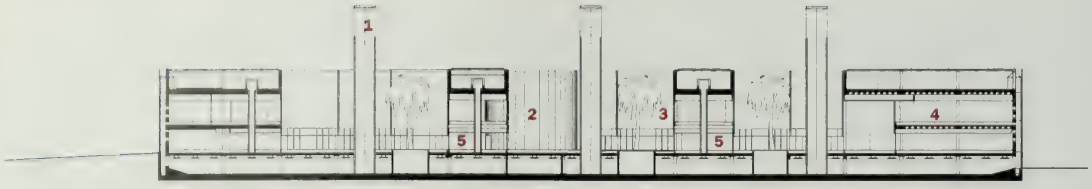
Although Kazuhiro Kojima + Kazuko Akamatsu/C+A first experimented with free-form study areas in its scheme for the Hakuo High School in Miyagi Prefecture (2001), Kojima was inspired in his balancing of open and closed spaces by the interior courtyards and gardens he visited in his extensive travels in the Middle East. A professor at the Tokyo University of Science, Kojima had been a member of the firm since it was formed in 1985 under the name Coelacanth Architects. In 1998, the practice was reorganized and renamed C+A, and Akamatsu became a partner in 2002. During this time, the firm (as Coelacanth Architects and C+A) designed several schools in Japan. Its experience in school design coupled with Kojima's interest in the Arab culture persuaded Isozaki to choose C+A for this project.

Project: *Liberal Arts and Science College, Education City, Doha, Qatar*
Client: *Qatar Foundation for Education, Science and Community Development*
Design architect: *Kazuhiro Kojima + Kazuko Akamatsu/C+A*
Master plan, project director: *Arata Isozaki & i-NET—Shuichi Fujie, project director*
Executive architect: *Perkins + Will*
Project management: *Shunji Nagata/Fox & Company*
Engineers: *Arup (structural); McGuire Engineers (m/e/p)*

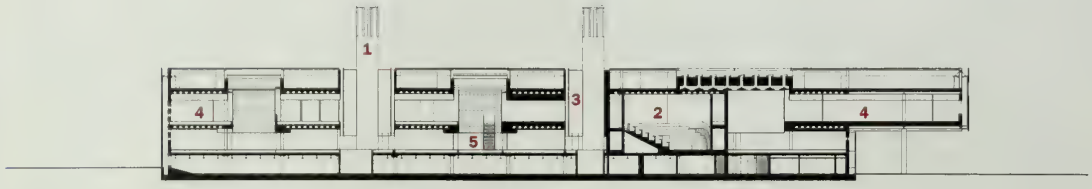




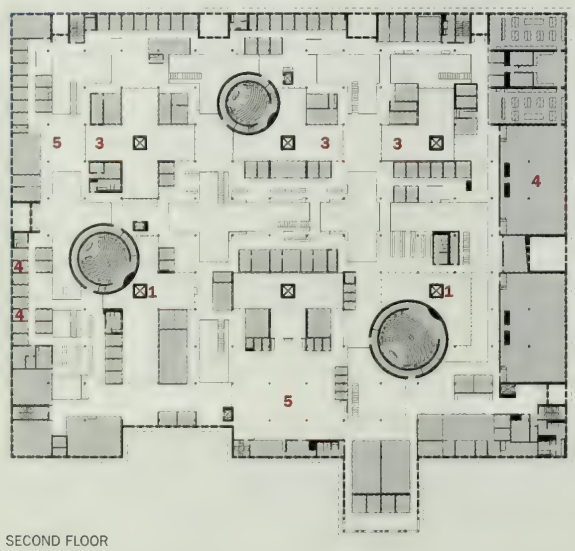
The boxlike form, wrapped by a geometrically patterned screen wall, belies the fact that the school's two classroom floors sit atop partly below-grade parking (this page and opposite).



SECTION A-A



SECTION B-B



SECOND FLOOR



FIRST FLOOR

1. *Wind tower*
2. *Circular auditorium*
3. *Indoor patio*
4. *Fixed spaces/ classrooms or offices*
5. *Flexible learning areas*

Screen walls of pierced glass-fiber-reinforced concrete panels shield the building from the harsh sun by day, and glow with illumination at night (opposite). Metal screens and glass walls offer an elegant combination of transparency and translucency (opposite, below). Inside the building, spaces are divided between fixed uses for classrooms and offices (black on the plan, left), and flexible learning areas and indoor patios (white on plan).

Isozaki's work for the emirate extends beyond the university: He served as the architect for Qatar's national library, its national bank, and a 215,280-square-foot villa for His Highness Sheikh Hamad Bin Khalifa Al Thani. As part of his role in the Education City, which was initiated by Her Highness Sheikha Mozah Bint Nasser Al Missned, Consort of His Highness, the Emir, Isozaki is not only in charge of the master plan, but is designing the auditorium/convention and exhibition center and the foundation headquarters, as well as other projects. As the sole person who presents all the work to the royal family, Isozaki officially maintains responsibility for the design. With the Liberal Arts and Science College, C+A designed the particular building, while executive architects Perkins + Will brought in structural and other related consultants and translated the scheme into working drawings for the local Qatari firm in charge of construction management. (Perkins + Will also just completed the Weill Cornell Medical College on the campus with the Tokyo firm of ADH Architects and Isozaki.)

While Isozaki's master plan sets some design parameters, such as a 49-foot height restriction, the site offered Kojima and his crew little more than sand and sun for inspiration. So they took their cues from the broader context of local customs and climate. With 90 percent humidity on most days, strong winds on some days, and scorching sun every day—it almost never rains in Qatar—the climate was a force to be reckoned with.

Six wind towers evocative of the type used for capturing Gulf breezes pierce the building to draw cool air down into the car park and hot air out. To control the sun and heat gain, C+A wrapped the building's outer surfaces not once but twice. A horizontal sunscreen sits atop the solid flat roof, while aluminum louvers deflect the rays coming through the skylights. The building's walls are wrapped in two layers of glass-fiber-reinforced concrete, separated by a 3-foot gap: An intricate web of polygonal panels forms the outer wall, while a smooth surface painted yellow and punctured with small windows constitutes the inner one.









Inside the building, veil-like layers of glass and metal permit light to permeate the classrooms and offices that overlook double-height indoor patios (this spread).

Throughout the two-level interior, double-height spaces abound (right and opposite), where stairs take students and faculty to classrooms, offices, and other facilities on the building's perimeter (below). The skylights bathe the interior with a luminous glow, and light is diffused by the dramatic use of patterned metal screens and reflective surfaces.



Activated by the sun's movement, the two layers play off each other continually, changing the building's appearance throughout the day. When the sun is high, the outer planes dominate and intense light washes out the yellow tint behind. But when the sun is low, the two surfaces trade places: The exterior planes recede and patches of brilliant color pop out.

Though the design on the building exterior resembles Arabesque tile work, it is based on quasi-crystal geometry discovered in England in 1984. The pattern derived from manipulating the 90-degree, 60-degree, and 30-degree parallelograms seems to expand infinitely from a single center point, never repeating itself. For the elevations, the architects placed the point of origin at the building's ceremonial entrance, and laid out a segment of the pattern in plan. They then folded up the flat drawing, transposing the motif onto the walls.

In contrast to the simplicity of the design of each panel was the difficult process of constructing the walls. Since every panel is uniquely shaped and extremely heavy, it took eight workers to lift each one into place. Because a conventional frame system would have cast unwanted shadows on the inner wall, the outer panels are anchored to the roof with stainless-steel cables. Lateral ties also help transfer the load to the building's flat- and waffle-slab concrete structure.

Inside, the quasi-crystal pattern shows up on screens and covers over the skylights, whose lacy openings bathe the interior with a diffuse natural light. Since the school is Qatar's first coeducational facility, a modicum of separation along gender lines was required. To shield female students from public view, and thereby ensure their comfort, a variety of metal screens and textured surfaces create numerous translucent partitions. While social customs significantly impacted design, religious requirements principally called for a small prayer room whose outer wall is tilted toward Mecca.

Obviously, C+A's sensitivity to cultural differences was essential for the success of the project. But its building is not a simple replication of indigenous traditions. True to the intention of Education City as a whole, the architects have brought new ideas, such as the quasi-crystalline geometry and the building's double-layered exterior enclosure, to Qatar. The result is at once familiar and innovative. ■



Sources

Exterior glass-reinforced-concrete panels: *Arabesque GRC-Qatar*
Support cable: *Prisma Space Frame*
Aluminum case screens: *Alba Tower Aluminum*
Glazing: *Technical Glass & Aluminium Company*
Fiber-wrapped acoustical panel: *Kinetics Noise Control*
Carpets: *Interface*

For more information on this project, go to Projects at **www.architecturalrecord.com**.





Piano's gently sloping piazza (opposite) descends from Padre Pio's last parish to the intersecting arcs of the new church's facade (this page).

Against the profane, the commercial, and the mundane, **Renzo Piano** strives to create a spiritual pilgrimage site at the **CHURCH OF PADRE PIO**



By Sarah Amelar

Along the road to the Church of Padre Pio of Pietrelcina, the saint's portrait—with his deep brown eyes, soft, gray beard, and coarse, rope-belted robe—appears over and over: on key chains, statuettes, spoons, medallions, postcards, ashtrays, crucifixes, and polyester bandanas, all brimming from souvenir shops. Small hotels, glowing at night with neon and backlit signs, also cram the arid hillside ascending to the sanctuary. Despite this active pilgrimage industry, the modest and remote town of San Giovanni Rotondo, in southeastern Italy near the spur of the "boot," still isn't easy to reach. But this past September, the month of Padre Pio's feast day, the place was clearly drawing hordes of people, often by the busload.

"All that garbage, the profanation confusing the commercial with the sacred—the man and his miracles" was one of the reasons architect Renzo Piano says he initially declined the commission to build a major new church there. "The rusticated place of Padre Pio [a Capuchin friar who died at 81 in 1968] had already been spoiled," recalls the architect. Besides, at first he considered the task impossible: How could anyone create an intimate, spiritual sanctuary with a capacity exceeding 6,500 people? But when Piano turned down the commission, his future clients responded by faxing Renzo Piano Building Workshop a different blessing every morning for a month, ultimately breaking the architect's resolve. "It became extremely clear how much they wanted me to do the project," says Piano, "and I realized it was snobby to say, 'I can't work with this place, it's already ruined.'"

His subsequent visit to the site helped clinch the deal. There, outcroppings of limestone and a broad, gently sloping plateau suggested an enduring material, as well as the form of a *sagrato*, or churchfront piazza. At that point, more than a decade ago, the 35-million-euro project began.

The challenges soon ranged from obtaining approvals for complex structures in a seismic zone to questions about the very nature of modern pilgrimages—a seeming oxymoron. At religious sites, continuity with the past is often both consciously and inadvertently preserved. While venerable historic buildings still dominate most major Christian pilgrimage destinations—including Lourdes, Bethlehem, and Santiago de Compostela—the dense entrepreneurial underbrush (or near Disneyfication) of sacred places actually harks back to the time of Chaucer's wayfarers.

By pilgrimage standards, however, San Giovanni Rotondo's religious significance draws on a remarkably recent past. Though the town, like many in Italy, includes centuries-old churches, Padre Pio's last parish, Santa Maria delle Grazie, just up the slope from Piano's site, dates largely from 1959. And memories of Padre Pio remain vivid in the minds of locals and clergy who knew him personally.

Devotees believe that this man, born Francesco Forgione into a farming family, bore Christ's bleeding stigmata for 50 years. Founder of "The Home for the Relief of Suffering," the town's hospital, Padre Pio is credited with such mystical gifts as predicting the future and healing the sick. Though he lived modestly, ate little, and heard some 60 confessions a day, the Vatican considered the friar controversial, repeatedly investigating him, once banning his public celebration of Mass, but ultimately exonerating him. The Pope canonized him in 2002, but the saint's worldwide following—estimated by some at 15 million—had been growing for decades.

To handle the anticipated deluge of devotees, Piano needed to create the area's single largest sacred structure—at 159,306 square feet—

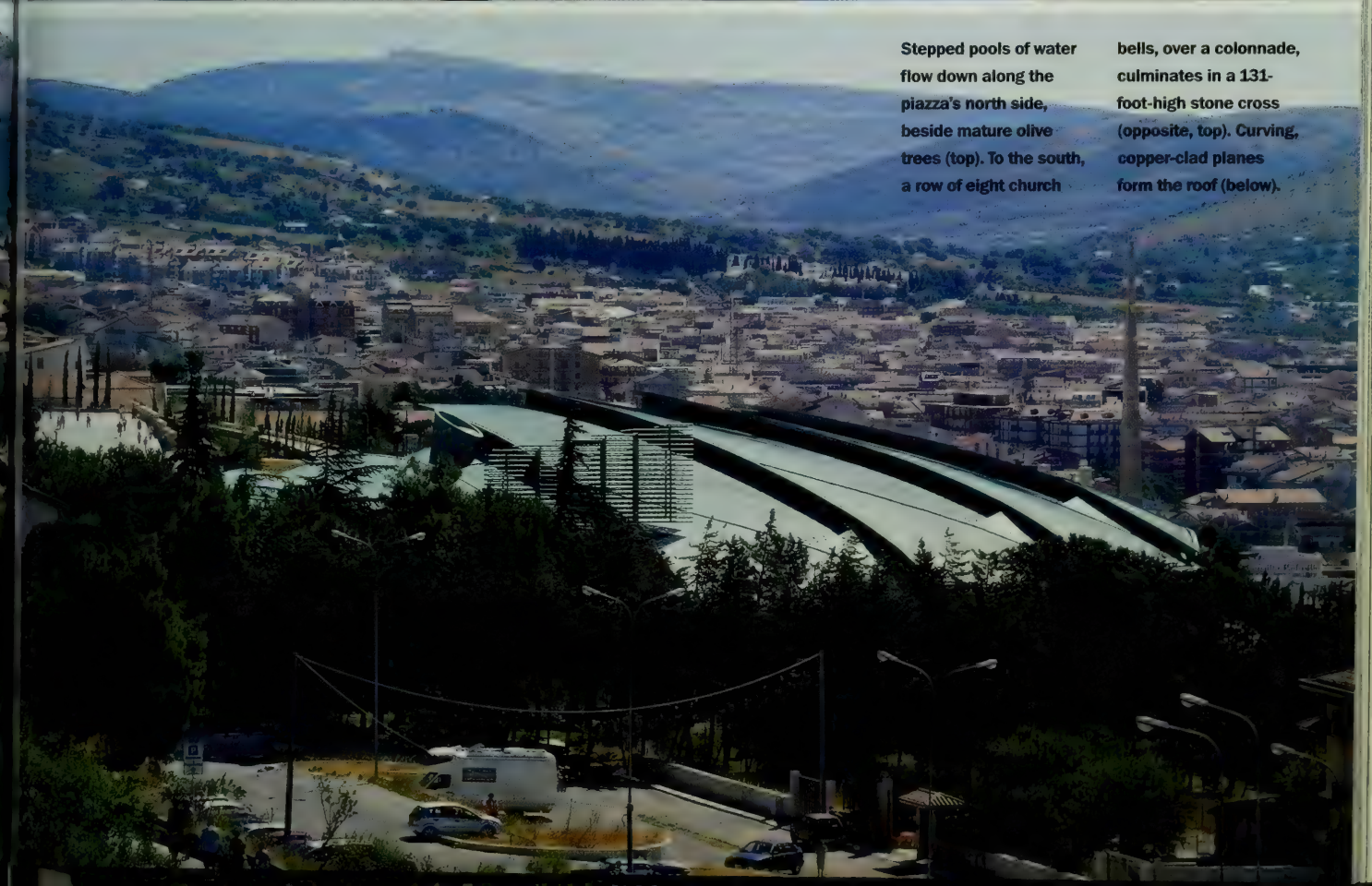
Project: *Church of Padre Pio of Pietrelcina, San Giovanni Rotondo, Italy*

Architect: *Renzo Piano Building Workshop—Renzo Piano, principal; Giorgio Grandi, senior partner in charge*

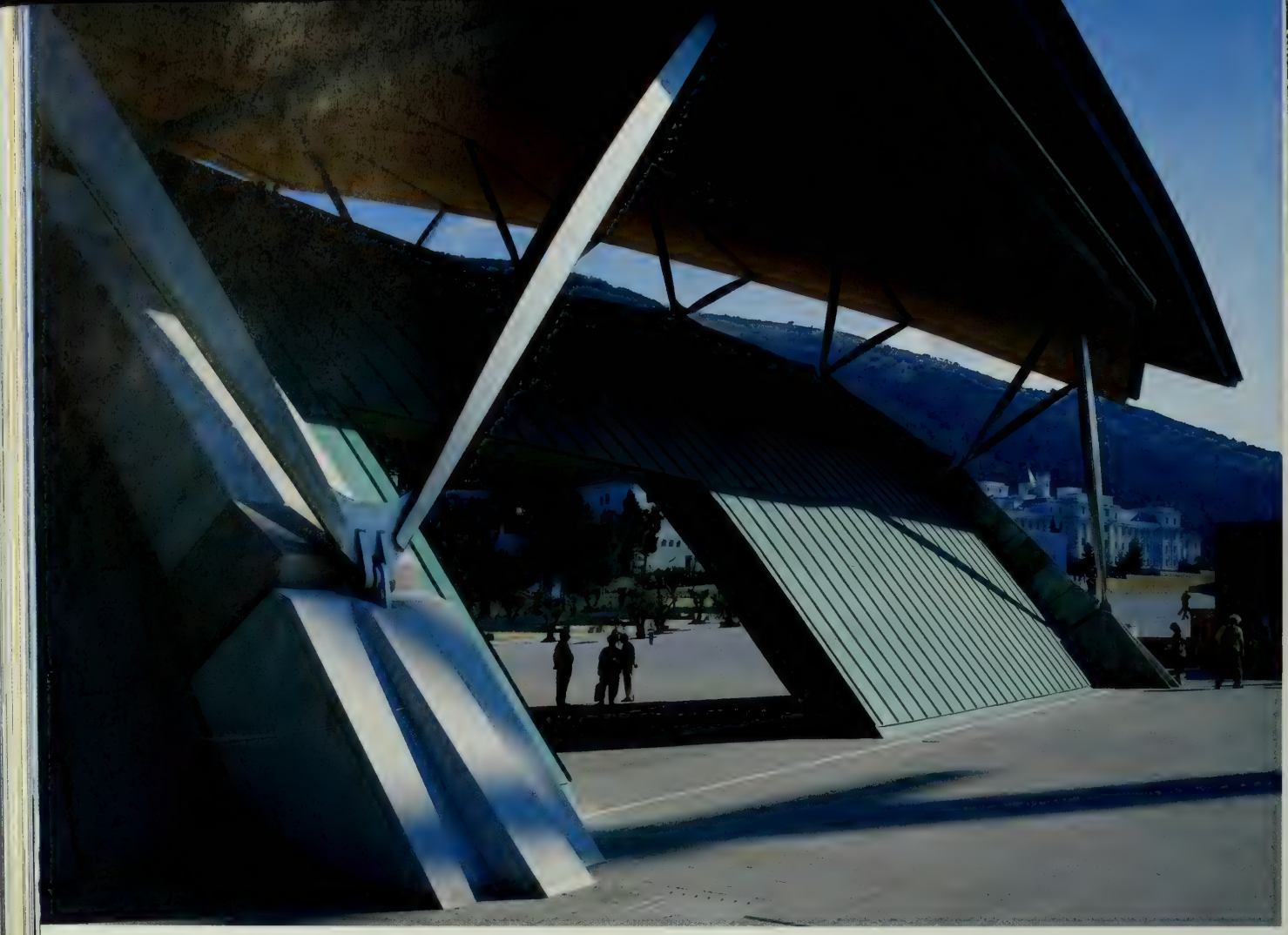








Stepped pools of water flow down along the piazza's north side, beside mature olive trees (top). To the south, a row of eight church bells, over a colonnade, culminates in a 131-foot-high stone cross (opposite, top). Curving, copper-clad planes form the roof (below).



accommodating 8,000 people (with some 1,500 standing) indoors, plus 30,000 visitors outdoors in its piazza. With a site unburdened by its own ancient history or dominant architectural precedent, the architect was relatively free to rethink the experience and needs of current-day pilgrims.

Piano decided early on to give the main sanctuary a semicircular plan, breaking with the traditional nave, apse, and side-aisle configuration. Embodying a modern and more democratic approach, the rounded form places everyone closer to a central altar, improving sight lines and diminishing the expression of hierarchy. To divide this sanctuary into intimate sectors while retaining a sense of its 64,583-square-foot whole, the architect devised a structural system of stone arches, just one voussoir deep, radiating from a massive column behind the pulpit. The 22 arches—made of hefty, computer-carved blocks of creamy local limestone—create fanlike zones and, says Piano, a seismically desirable structure. (Relying on the precision of advanced fabrication technologies, the building's central resolution of forces and its arches' ability to flex help respond to an earthquake.)

Steel struts rising from the arcs support the laminated wood roof, with its stuccoed underside and its green, segmented outer shell of preoxidized copper. Though the V-shaped struts separate and articulate structural components, allowing clerestory illumination of the curved ceiling above the arches, the multiplicity of thin members, set at varying heights, complicates, even clutters, the visual experience. At the same time, the heavier interior members, the arcs themselves, have a muscular presence, reminiscent of Viollet-le-Duc's forms flexing their structural biceps.

Forming a bold motif, two of these members intersect on the entry facade, with one of them—arguably the world's largest arch—spanning164 feet and rising 52. The barrel-arc facade, unfortunately, has become a tricky act to pull off in a world where such elevations were all too often appropriated by 1950s and 1960s supermarkets, while twin golden arches have taken on, well, other connotations. Here, the authenticity of materials and integrity of structure help transcend such associations, but the larger gesture becomes slightly overloaded with the combination of smaller exterior moves, including scalelike, patinated roof plates, raised on struts, and to the west, tall, slatted brises-soleil.

But perhaps the real triumph of Piano's design lies less in his building than in his understanding of how the modern pilgrim moves across the landscape and through a sanctuary. The architect speaks of "walking the site over and over" at the outset of every project, and he clearly roamed this land with passion. Following the hill's contours, his gently sloped piazza—descending from Santa Maria delle Grazie to the arcing entrance of the new church—has a shepherding or embracing quality. Like the keyhole shape of Bernini's St. Peter's Square, in the Vatican, it draws in great flocks of people.

On the facade of Piano's church, an open archway ushers in congregants, while the larger arc intersecting it contains a modern equivalent of a stained-glass window: an image of the Apocalypse actually composed of a grid of semitranslucent, roll-up shades. This artwork—an

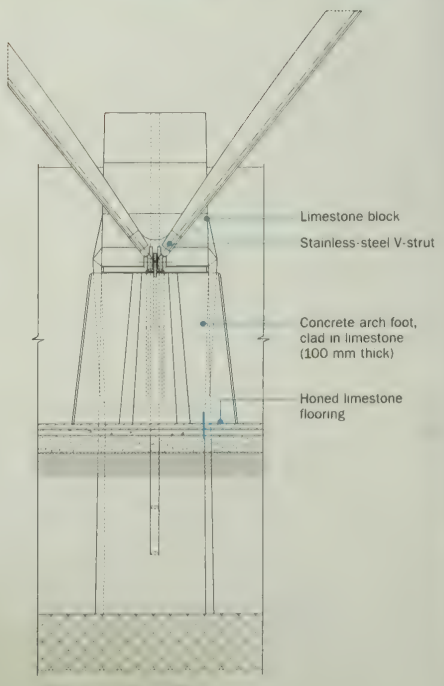


Slatted brises-soleil shield the church's west face from the setting sun's low rays (this page). Battered walls, clad in ribbed, patinated copper, curve around the west side of the building (opposite).

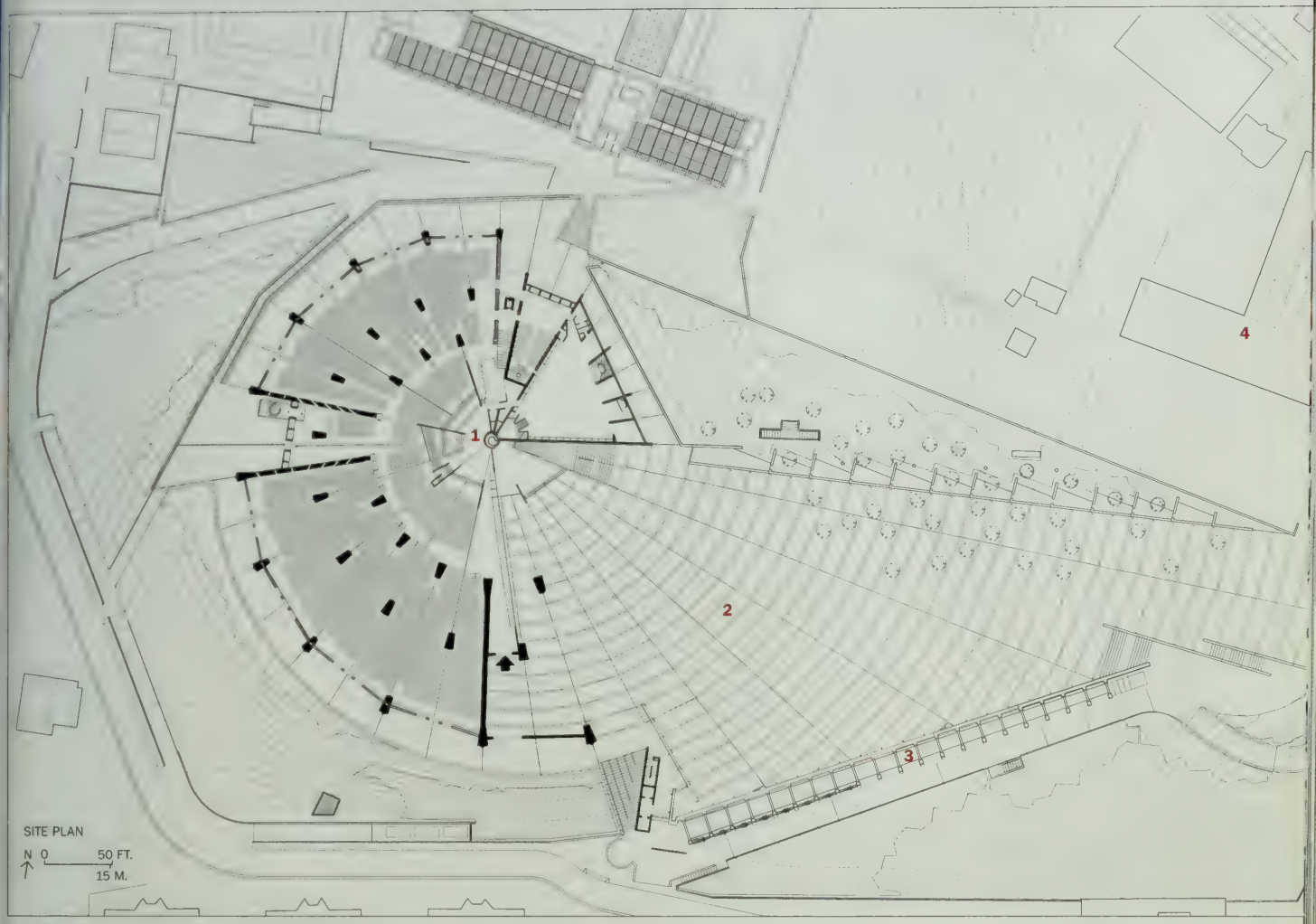




A vaulted colonnade, converging toward a forced perspective (left), rises along the hillside on the south edge of the piazza. A row of eight church bells, leading to a huge cross, crowns this contemplative promenade (above far left). The piazza's parapet masks out undesirable views.

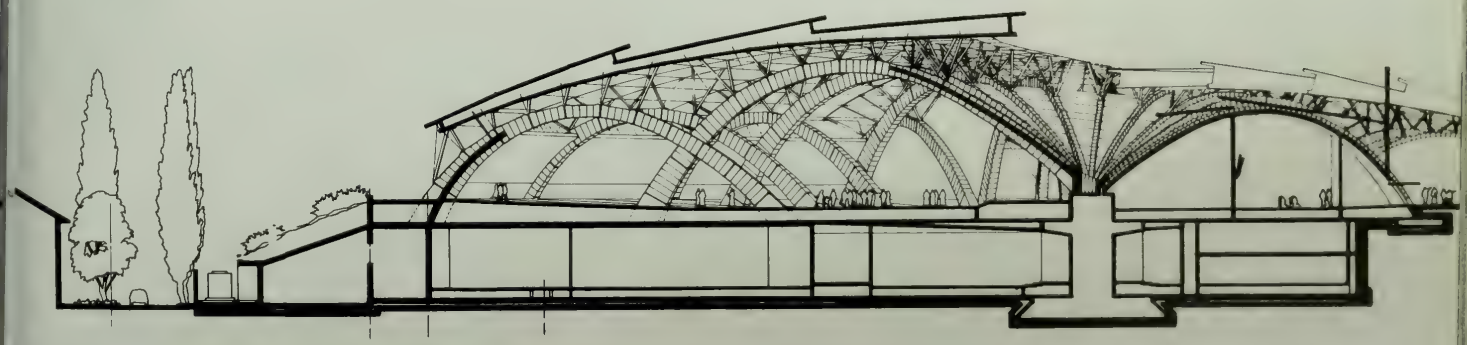


INTERIOR SECTION DETAIL: THROUGH ROOF SUPPORT



1. *Main sanctuary of new church*
2. *Piazza (sagrato)*
3. *Colonnade*
4. *Santa Marie delle Grazie*







Two concentric rings of arcs, made of local limestone with concrete bases, radiate out from a massive column behind the pulpit.





V-shaped stainless-steel trusses allow clerestory light to illuminate the ceiling that curves above the sanctuary's stone arches (this page and opposite).

enlarged and highly pixilated reproduction of a 12th-century manuscript—is merely a stand-in for Robert Rauschenberg's own Apocalypse on shades, which was created for this venue but awaits Vatican approval.

With some of the blinds raised, the great window reveals its transparent glass, merging the gatherings in the sanctuary and the piazza. At night, with only the lower bands of glazing exposed and the words from the pulpit amplified to the outdoors, the effect becomes particularly powerful.

The building form contributes to the daily religious processions within and around it. Behind the pews, radiating out from the altar, rear doors of ribbed, patinated copper pivot overhead, allowing all 8,000 people to flow out as Mass ends. Following the clergy, who raise the likeness of a holy figure above the multitude, the congregation chants the litany, encircling the sanctuary before entering the plaza. Then, with remarkable ease, the vast crowd filters back inside, completing the ceremony.

The sense of ritual and procession reaches beyond the immediate vicinity of the church to the journey approaching it. The Italian word for pilgrim, *pellegrino*, akin to our French-derived *peregrine*, refers to the act of wandering. But modern pilgrims tend to arrive here in banal conveyances—buses or cars—which must remain in parking lots at the base of the hill. Accepting yet transforming this practicality, Piano's scheme offers a contemplative route from parking to sanctuary: a long allée of some 2,000 cypresses, still to be planted, with the path ascending through a colonnade. Enriching a potentially mundane walk with places to pause and reflect or relax, the architect helps restore the meaningful notion of the wandering pilgrim.

Piano also subtly raised the parapets along the approach and around the piazza, leaving only the foreground and distant landscape visible. The middleground, with its tacky trinket shops and garish signs, effectively drops from view, removing the ordinary from the sacred.

During a candlelight ceremony one recent evening, which happened to be 9/11, the spiritual character of this precinct and its siting clearly prevailed. From the piazza, the church appeared in its essence, glowing from within; while from the sanctuary, the extraordinary view back flickered with tens of thousands of lights descending the hill. The ground plane's upward tilt, coupled with the crowd's density, revealed the flames seemingly all at once and in slow motion. With any extraneous or awkward detail vanishing into darkness, indoors and out flowed miraculously together.

When Piano struggled to overcome his aversion to the site's surrounding "profanity," he reasoned, "Maybe only one in 1,000 visitors will be deeply spiritual, but if 7 million people come each year, then there's a real hope of reaching at least 70,000 of them." He may well achieve that. ■

Sources

Furniture: *Genuflex (liturgical); Poltrona Frau (lecture hall seating)*
Copper roofing: *WAL*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



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Urban Pioneers

TO MAKE CITY LIVING MORE ATTRACTIVE, ARCHITECTS AND DEVELOPERS ARE REINVENTING THE LOFT FOR PEOPLE MOVING IN FROM THE SUBURBS AND LOOKING FOR STYLE.

By Clifford A. Pearson

For anyone who has shopped housing markets in cities around the country, the term "postwar apartment building" usually conjures images of low ceilings, charmless layouts, and generic architecture. If you can afford it, you immediately skip to the listings for prewar buildings. But wait. Check out the new housing projects in this article and see how a number of developers are finding success by providing alternatives to the cookie-cutter product built by most of their competitors. Innovative design, flowing spaces, and generous ceiling heights are proving to be successful ways of attracting buyers, many of whom are empty-nesters moving out of the suburbs or young professionals with enough money to be choosy about where they live. These people want apartments that express a sense of style and accommodate modern ways of living that require fewer partitions while blurring divisions between living and dining, kitchen and den, home and office.

Although these more daring developers still account for a minority of what is being built, they are operating at a time when the market has been relatively strong. According to McGraw-Hill Construction (a division of the McGraw-Hill Companies that includes ARCHITECTURAL RECORD), multifamily housing starts rose a "vigorous" 10 percent in 2003, to 441,000 units. For-sale units (condos, co-ops, and town houses) led the way, while demand for rental apartments remained sluggish. Low interest rates made buying more affordable and real estate more attractive than other types of investment. Rising interest rates and a "jobless recovery," though, are taking much of the steam out of the market, and McGraw-Hill Construction forecasts a modest 2 percent reduction in multifamily housing starts for 2004, and then an equally modest uptick in 2005.

The projects shown in this Building Types Study bespeak quality, not quantity. All offer lofts, which signify sophisticated urban living to many affluent people, and most provide at least a small piece of outdoor space for each living unit. The architects have worked hard to bring daylight and air into all of the apartments, often using courtyards and sometimes boldly glazed skins to do the trick. For all their progressive approach to design, the projects here also find ways to connect to the existing urban fabric around them. Two of the buildings (497 Greenwich Street in New York and Humboldt Lofts in Minneapolis) literally attach themselves to older structures, while another (Lofts at Laurel Court) recalls the courtyard housing popular in West Hollywood in the 1920s. The fourth (138 Barcom Avenue) takes directions from the coveted northern light of Sydney, Australia. Taken as a group, these projects prove that good architecture and multifamily housing are not incompatible. ■



1.

New York City

Winka Dubbeldam designed an undulating glass facade for an 11-story building that slides up and around an old brick warehouse.



2.

West Hollywood, California

The architects at Public updated the old courtyard apartment model, giving the Lofts at Laurel Court lots of volume inside and open space outside.



3.

Sydney, Australia

At 138 Barcom Avenue, Engelen Moore used its brand of sleek Modernism to help turn around a once-dicey neighborhood.



4.

Minneapolis

With the Guthrie Theater going up next door and old mills all around, Julie Snow's Humboldt Lofts are a hip new address on the Mississippi.

For more information on these projects, go to Projects at **www.architecturalrecord.com.**

497 Greenwich Street
New York City

WINKA DUBBELDAM SLIPS A CRYSTALLINE BUILDING INTO THE TIGHT URBAN FABRIC OF A LOWER WEST SIDE NEIGHBORHOOD.

By Clifford A. Pearson

Architect: *Archi-tectonics—Winka Dubbeldam, principal in charge; Ana Sotrel, project leader; Michael Hundsnurscher, Nicola Bauman, Amy Farina, Deborah Kully, Stacey Mariash, Ty Tikari, Leo Yung, Beatrice Witzgall, Tanja Bitzer, project team*
Architect of record: *David Hotson Architect*
Client: *Take One—Jonathon Carroll*
Engineers: *Buro Happold (structural); Gabor M. Szakal (mechanical)*
Consultants: *Shen Milsom & Wilke (acoustical); Israel Berger (curtain wall)*
General contractor: *York Hunter*

Size: *23 lofts plus retail on ground floor, 77,000 square feet*
Cost: *Withheld*
Completion date: *October 2004*

Sources
Structural steel: *Canatal Industries*
Steel erectors: *Millennium Steel*
Concrete masonry: *Anchor Concrete*
Curtain wall: *UAD Group*
Curved glass: *Cricursa*
EIFS: *Dryvit Systems*
Wood/aluminum windows: *H-Windows*
Glazing: *Floral Glass*
Glass-curtain-wall doors: *Kawneer*
Kitchen cabinets and island: *Ricicla system by Valucine*
Kitchen contractor: *New Industries*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

Fold paper and you give it extra strength and, in the right hands, added beauty. Fold glass and you get an "inhabitable facade," says Winka Dubbeldam of the 11-story loft building that her firm, Archi-tectonics, completed in October. Using bent glass and a fluid approach to geometry, Dubbeldam created a curtain wall with depth, a street front that envelopes space as much as it separates inside from out.

Set on the western edge of SoHo, which had retained a gritty industrial demeanor until recently, the building at 497 Greenwich Street injects a rousing dose of 21st-century Modernism while engaging the past. The new structure rises alongside and then extends over its six-story, 19th-century neighbor to the south, drawing the older brick building into an architectural tango. On the inside, the two buildings work as one, with all floors aligned and a common service core.



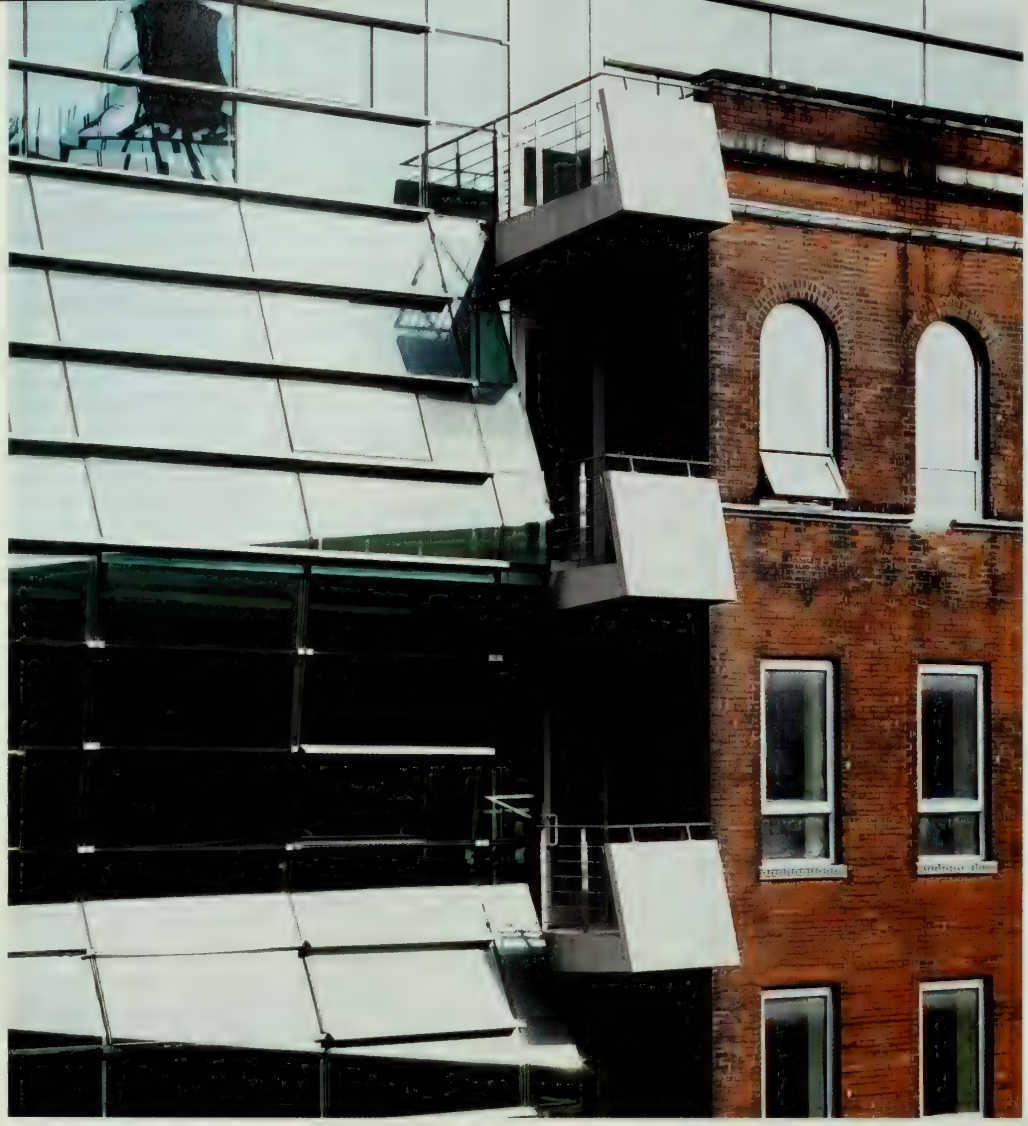
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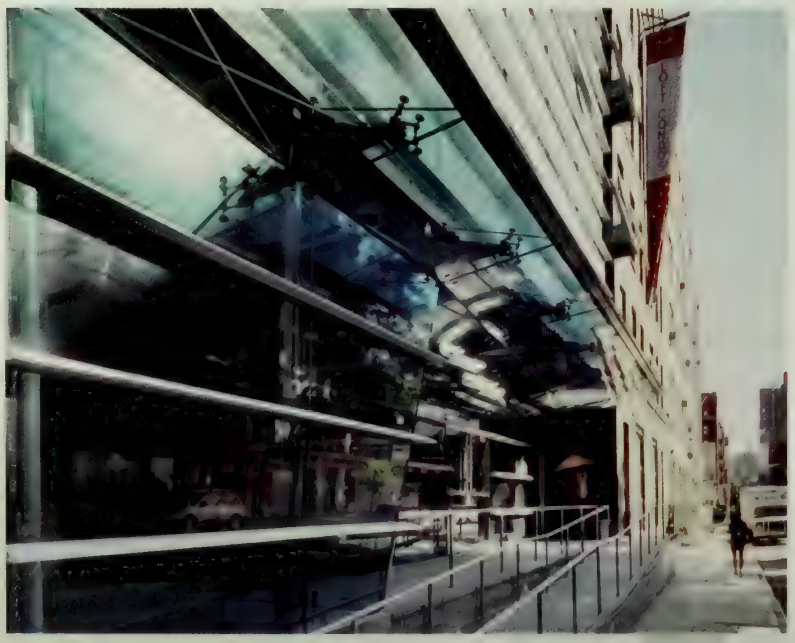
While New York City developers have been riding a booming residential market over the past several years, almost all of the apartment towers they've built have been numbingly formulaic in terms of floor plans and exterior design. Jonathon Carroll, a London banker who had hired Dubbeldam to design a New York apartment for him in the late 1990s, looked at the situation and saw an opportunity to do something different. Wary of a stock market that he correctly saw as overvalued, he decided in 1999 to invest his money in real estate instead. And rather than the cookie-cutter apartment towers rising all over Manhattan, he asked Dubbeldam to design spacious lofts in a building that would generate some architectural excitement.

By inserting a new building on the street and incorporating the empty six-story warehouse next door, the architect could create 23 living units and provide space on the ground floor for an art gallery or stores, as well



After the project began, another glass building went up (far left, this page and opposite), but 497 Greenwich still engages in a striking dialogue with the brick building that serves as its mate (below right).





Small balconies, which will be clad with untreated cedar, serve as a vertical crease between old and new (above). A glass canopy over the entry ramp (right) pulls the building out to the street.

as a small fitness center and meeting room for the residents.

Solution

Wanting to establish a dynamic relationship between old and new, Dubbeldam explored the idea of "slippage" in her design. Instead of presenting a static pairing of eras and structures, she decided to slip one up and past the other. At the same time, she developed the notion of creasing the new glass facade, treating it as the fashion designer Issey Miyake might a pleat in the fabric of a dress. Bending the glass off the vertical plane and angling it off the horizontal, Dubbeldam sculpted a remarkably three-dimensional facade. "I wanted to create a new kind of folded vertical landscape," says the architect, "with the folds of the glass integrating the setbacks required in the city's building code."

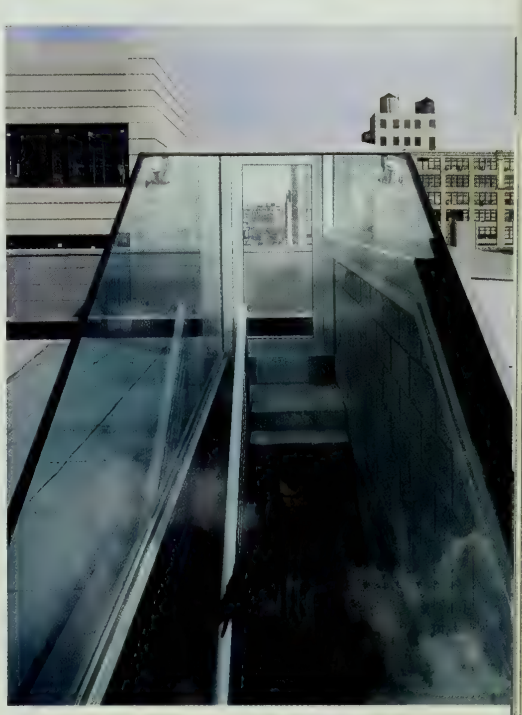
Using structural glazing with a steel frame pulled a few inches behind it, Dubbeldam designed a curtain wall that seems to float independent of its support. To keep the steel columns as thin as possible, she used steel cables to cross-brace the structure. The first seven stories of the glass facade are hung from the the eighth floor, reinforcing the notion of a transparent curtain. As the building steps back away from the street in two-story increments, the curtain wall rises from the floor below, instead of hanging from above.

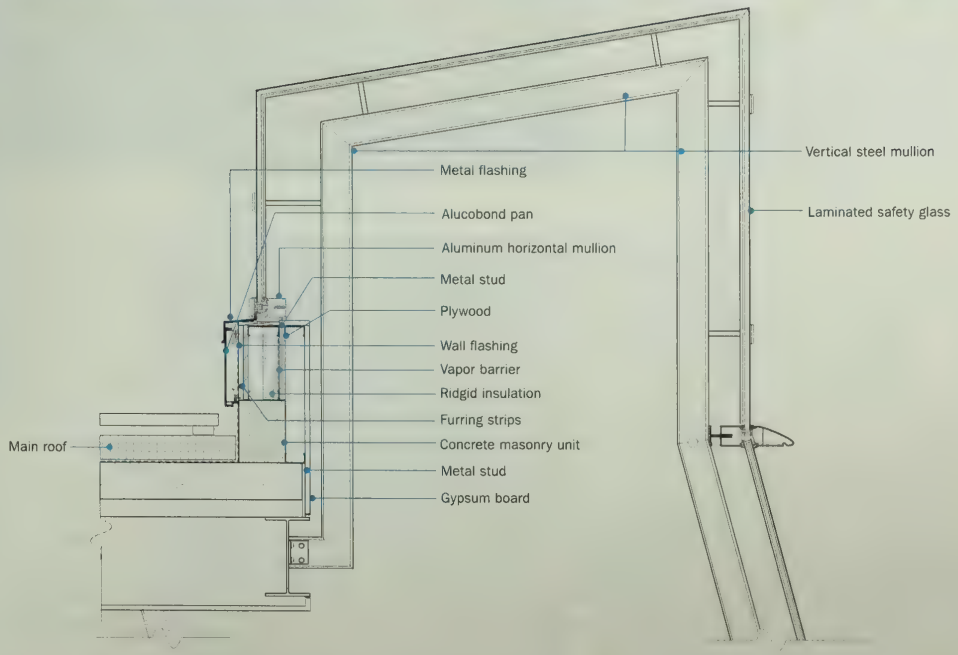
For the creases in the facade, Dubbeldam worked with the manufacturer in Barcelona who produced the glass for Herzog & de Meuron's Prada Tokyo store [RECORD, October 2003, page 92] to create glass panels that bend in two directions. To manufacture these pieces, the company folded flat sheets of glass over molds by heating different portions of the glass at different temperatures.

Although the curtain wall faces west, laminated glass, UV film, and exterior metal fins reduce the impact of the sun. "Residents can put their Rembrandts and Van Goghs on the wall right behind the glass and not worry," says Dubbeldam. Thick concrete-masonry walls also block out noise and make the building energy



A long glass skylight (left and drawing, bottom) runs along the top of the penthouse, facing the Hudson River. A glass-enclosed stair (below) provides access to a roof terrace and is another expression of an architecture designed to float within the city.





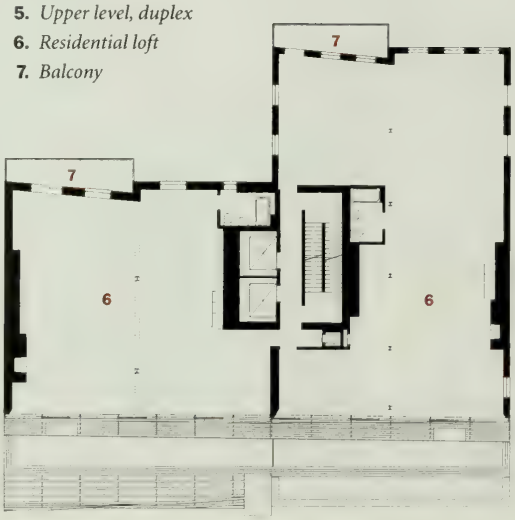
PENTHOUSE SKYLIGHT





Lofts come with bathrooms and all mechanical and plumbing installed, but residents have to finish the units themselves. Dubbeldam bought a 1,900-square-foot loft for herself (right) and installed a kitchen with yellow carbon-fiber cabinets and stainless steel counters (below).

1. *Commercial*
2. *Meeting*
3. *Storage*
4. *Fitness*
5. *Upper level, duplex*
6. *Residential loft*
7. *Balcony*



EIGHTH FLOOR



GROUND FLOOR

efficient, she adds. Both the curtain wall and the east-facing rear wall have operable windows, and every unit has a cedar-sided balcony.

For the lofts themselves, Dubbeldam kept them as simple as possible, letting the 12-foot-high ceilings and expansive views to the Hudson River do the talking. Each floor of the old building has two 1,900-square-foot units on it, while the new building has one 3,000-square-foot unit per floor. In the portion of the project above the old building, there is either one 5,700-square-foot loft on each floor or two dividing that space. The units sell for about $1,000 per square foot, says the architect, who just moved into one of the 1,900-square-foot units.

Commentary

With 497 Greenwich Street, Dubbeldam has shown she can build on an urban scale and offer an exciting alternative to the copycat housing that has long dominated the New York City market. ■

The developer kept the penthouse (this page) for himself, so he could enjoy the spectacular views. Even the bathroom (below, far right) gets a view of the Hudson and New Jersey. Steel spacers separate the glass wall from its supporting steel braces, adding to its ethereal character (right and below left).







Lofts at Laurel Court
West Hollywood, California

2 **PUBLIC'S DESIGN ALLOWS RESIDENTS TO TAKE REFUGE FROM URBAN LIFE IN AMPLE COURTYARDS AND OUTDOOR AMENITIES.**

By Ann Jarmusch

Architect: *Public—James Brown AIA, James Gates, partners; Francisco Garcia, project manager; Alfred Wilson, Michael Paluso, Steven Rosenstein, team*
Client: *Palisades Development Group*
Consultants: *Kenneth Brown Design (interiors); Envision Engineering (engineer); Dry Design (landscape); Coury Enterprises (general contractor)*

Size: *46,719 square feet*
Cost: *$4 million*
Completion date: *May 2004*

Sources
Structural system: *Tony B. Concrete (cast-in-place concrete); O'Neil Framing (rough carpentry); CS Construction (finish carpentry); Peterson Brothers Construction (mason); Spec Iron (structural steel)*
Exterior cladding, plaster: *California Plastering*
Exterior cladding, metal: *Shoreline Sheet Metal*
Aluminum windows: *Starline Windows*
Entrance doors: *Texin Doors*
Exterior painting: *Kostas Gioulis Painting*

For more information on this project, go to Projects at www.architecturalrecord.com.

West Hollywood is home to the R.M. Schindler House, 1920s bungalow courts, and tree-shaded residences evoking French châteaux, Spanish haciendas, and Tudor manses. Here, an aura of glamour and artistry has survived the onslaught of Sunset Strip–style urbanism and car culture. Unfortunately, bland, low-rise apartment buildings over gaping garages have ravished the charm of this 1.9-acre city, a plague of the character-killing typology that has proliferated here since the 1960s.

Today's urgent need for higher-density housing coincides fortuitously with the aging of these soulless, poorly built buildings. In response, the city encourages new multifamily residences based on the area's historic courtyard housing, originally built in Spanish Revival or Craftsman style. Today's courtyard guidelines include doubling the usual requirement for common outdoor areas. In return, developers are allowed extra living space per unit without an increase in parking requirements, relaxed setbacks, and other concessions.

Judging from several fresh, new courtyard-housing projects, the policy seems to be working. Palisades Development Group of Santa Monica hired Public, a small San Diego architecture firm, to design the 20-unit Lofts at Laurel Court after Palisades' president, Avi Brosh, admired Public's mixed-media, multifamily Dutra Building in San Diego.

Ann Jarmusch is the architecture critic for The San Diego Union-Tribune.



Program
The 20 condominiums fill three buildings arranged around an elongated T-shaped courtyard. Except for one building that faces Laurel Street, residents enter their units from the courtyard. A wooden trellis high overhead signals the principal entrance into the landscaped courtyard of the loft buildings. Just inside a wooden gate, mailboxes, trash chutes, and an elevator are concentrated on a concrete platform elevated several steps above the curved entry path.

Laurel Court's common open space is about five times greater than the open area required of non-courtyard housing projects, according to Public's James Brown. Varied landscapes—raised beds of succulents, striking olive trees, benches attached to planter boxes—unfold as you move through the site. Even the below-grade garage is part sunken garden at one end: Its bamboo stands are expected eventually to shoot up to screen views of an adjacent apartment building.

Solution
"Our customer tends to be the high-end, design-conscious urban dweller," Brosh said. "This product really caters to them" in concept and detailing. Inside the two- and three-level units, white, sculptural interiors soar or stop at quirky angles; exposed ducts shimmer. Outside, large, mosaic-tile color blocks enrich expanses of stucco, while tall wood towers, dressed up with climbing vines, enclose open-air stairways.

Public delivered the same



The street-facing building greets the visitor with wall openings and a monumental wood trellis, which serves as a welcoming beacon (this page). Fitness-oriented Los Angelenos prefer to take the exterior stairs and catch some rays at the same time (opposite).





Elevated walkways double as sunshades and decks (top). A cheerful collage of colors and materials distinguishes the three buildings (bottom).

finesse and unexpected combinations of sleek and rustic materials, artistic finishes, and wit that appealed to Brosh in the San Diego building. (Here, downspouts recall ancient Egyptian figures; vents "wear" conical hats.) Laurel Court's simple, boxlike shells were affordable to construct and allowed Palisades to spend more money on distinctive materials and detailing.

The three different buildings respond to the long, narrow site running north-south. Common features—such as steel front doors painted boysenberry—fenestration rhythms, and outdoor circulation unify them. Two long, narrow buildings face each other; one is splayed to create a wedge-shaped courtyard. Brown describes this relationship as "halving the building" and breaking it open on-site, which increases open space, creates surprising nooks, and affords more privacy.

The third building, with an eggplant-colored masonry base and galvanized-sheet-metal siding on the upper stories, stands perpendicular to the other two, capping the site's north end.

Each loft runs the width of its building, so natural light penetrates the interior via large front and back windows, doors with narrow glass slots, and in some units, glass roll-up doors. This high percentage of glass blurs the boundary between indoor and outdoor space, erasing barriers between rooms and decks. Large, private roof decks sit atop two of the buildings. Among the beckoning garden areas is a walled "outdoor room" that, with its citrus trees and fountain, echoes Southern California's Spanish heritage.

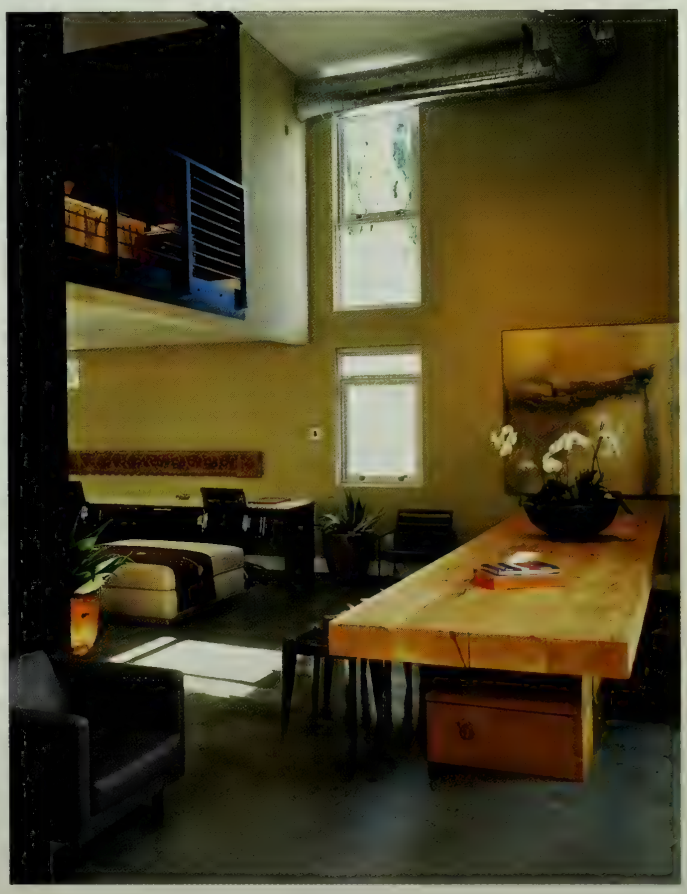
Commentary

The Lofts at Laurel Court create a private yet playful, airy living environment that energizes the neighborhood without shrieking at the uninspired buildings around it. Through careful siting of upbeat architectural forms wrapped in geometric greenery, Laurel Court revitalizes the urbane-but-casual-living formula that has long made courtyard housing desirable. ■

1. *Loft*
2. *Garage entry*
3. *Courtyard*
4. *Outdoor room*
5. *Sleeping*
6. *Balcony*

High ceilings and industrial-style windows make the units seem larger than they actually are (top). Open floor plans and sleeping lofts provide flexibility for live-work or artist's studios (bottom).











138 Barcom Avenue
Sydney, Australia

3 **ENGELEN MOORE TURNS A BUILDING TO THE NORTH AND INSERTS A SMALL COURTYARD TO BRING LIGHT AND AIR INTO SLEEK LOFTS.**

By Michael Walters

Architect: *Engelen Moore—Ian Moore, design architect; Will Fung, project architect; Tina Engelen, Guy Lake, Yosihito Kashiwagi, Sean Radford, Rowena Hockin, Manuelle Schelp, Claire Meller, Dua Cox, project team*
Client: *Jumbuk Pty*
Engineers: *Arup (structural); Medland Mitropoulos (m/e/p)*
Landscape consultant: *Good Manors*
General contractor: *Arenco*

Size: *26 living units, 30,000 square feet*
Cost: *$5.87 million*
Completion date: *September 2002*

Sources
Prefabricated concrete-fiber wall system: *Ritek*
Aluminum curtain wall: *Svendour*
Aluminum skylights: *Symonite*
Aluminum windows and doors: *Capral*
Joinery and paneling: *Valcore*
Stainless-steel benchtops: *Stanford Stainless Steel*
Fluorescent paint: *Vipond*
Marmoleum flooring: *Forbo*
Bathroom fixtures: *Duravit*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

When it comes to Sydney apartments, harbor views are paramount, especially if they include a peek at one of the city's two famous landmarks: the Harbor Bridge or the Opera House. So architect Ian Moore and his former firm Engelen Moore (he and business partner Tina Engelen recently dissolved the practice and went separate ways) faced a huge challenge in attracting urban professionals to 138 Barcom Avenue, an apartment block in an unsavory inner-city neighborhood that boasted no views—not even of the city itself—and little exposure to the coveted northern sun. As if to underline the challenge, one of the project architects was mugged on-site at the start of the job.

Program

One of Sydney's leading real estate agents, John McGrath, decided to try his hand at property development with 138 Barcom Avenue. Impressed with Engelen Moore's reputation for sharp-edged Modernism—as seen in the Rose House [RECORD, July 2001, page 108]—and the firm's caché with upscale professionals, McGrath asked Moore to create a strong piece of architecture rather than just maximize the number of units on the site. "I wanted to develop something that reflected Sydney's new personality—fresh, contemporary, and bold," states McGrath.

Michael Walters writes from Sydney for Vogue Living *and* Belle.





1. *Parking*
2. *Loft*
3. *Balcony*



EAST-WEST SECTION

Upper units turn to face due north (this page). At night, the lofts and a glass-enclosed stair add a welcome glow to the area (opposite two).







The complex adjusts to its tricky site, orienting units to a central courtyard (opposite and left), tucking the parking entry under the southwest corner (bottom left), and spreading out on Barcom Avenue (bottom right).

To accommodate modern lifestyles, the project would feature generously sized units with large balconies. Perhaps Moore's toughest task was bringing enough daylight into a complex with a narrow north-facing street frontage and a six-story commercial building looming next door. McGrath's bet on Engelen Moore paid off when all of the 26 residential units sold 18 months before construction began.

Solution

An irregular site with three street frontages and an 18-foot drop between two of them forced the architects to devise a plan that pieces three small buildings together like a puzzle. By inserting a narrow courtyard into the center of the site and using grade changes to tuck parking underneath, Moore turned the property's problems into advantages. In doing so, he created an apartment complex that twists to capture light and air and offers seven different types of living units.

Facing Barcom Avenue, the main building rests on a podium with parking below and a combination of 700- and 1,025-square-foot studios on the main floor. Above this base rises the project's identifying feature: a series of tubes oriented due north. Each tube contains a single-level studio apartment with a 1,500-square-foot duplex above it. The northern twist of the upper-level units not only adds a dynamic element to the building's form but introduces an important environmental element: a small triangular yard at the back of each unit that serves as a thermal chimney and brings daylight into the center of the building. Indeed, the entire building relies on natural ventilation, not air-conditioning, for cooling.

South of the main building and connected to it by a long aluminum-louvered, open-air corridor and a





LEVEL 3



LEVEL 2

1. *Entry*
2. *Loft*
3. *Balcony*
4. *Light well*
5. *Pool*
6. *Courtyard*

Residents select one of several bright colors for their bathroom pod, which divides the living space. Panels slide from the pod to define a bedroom (below). Although the complex has seven unit types, all feature a "working wall" that congregates storage, kitchen, and entertainment in one plane (opposite three). A glass stair maintains a sense of openness (opposite, top right and bottom).







glass-enclosed stair, a three-story wing contains 1,200-square-foot, two-bedroom units and one 700-square-foot studio that sits above the entrance to the car park.

The smallest of the three buildings occupies the northeast corner of the site, with its own entrance off a back street, and houses three single-floor, 1,025-square-foot units that include small home offices.

For the apartments themselves, Moore says, "I like letting people know how much space they have rather than cutting it up with walls." So he designed each unit as a simple tube with a central, brightly colored bathroom pod creating the only division. A "working wall" running the entire length of the apartment (and onto the balcony) integrates storage, laundry, entertainment equipment, and kitchen in one long plane. Six glass panels can slide into the working wall, opening the living space directly to the balcony. The central pod also has sliding doors that can either enclose a bedroom or create one flowing interior space.

Commentary

The environmentally responsive Modernism of 138 Barcom Avenue serves as a striking critique of the British Victorian terrace home that pervades Sydney's inner suburbs. While making a veiled reference to the terrace house by adopting its 16-foot width, Moore creates a bold alternative designed specifically for Sydney's climate, not adapted from a model taken from a far-off land. ■







Humboldt Mill + Annex
Minneapolis

4 **JULIE SNOW ARCHITECTS INSERTS A LOFT BUILDING THAT ACCOMMODATES A MODERN LIFESTYLE INTO A HISTORIC MILL DISTRICT.**

By Camille LeFevre

Architect: *Julie Snow Architects—Julie Snow, FAIA, Ben Awes, Christian Dean, Bob Ganser, Tim Bicknell, AIA, Dan Vercruysse, Martha McQuade, Malini Srivastava, Ernesto Ruiz Garcia, Zoe Adler Resnik, Kenwood McQuade, Craig Roberts, Jim Larson, project team*
Client: *Humboldt Lofts*
Engineers: *Mattson McDonald Engineers (structural); Doody Mechanical, Jack Snow Engineering (mechanical); Elliot Contracting, Paulson & Clark Engineering (electrical); Hanson Thorp Pellinen Olson (civil)*
General contractor: *Bor-Son Construction*

Size: *148,000 square feet*
Cost: *$19 million*
Completed: *2004*

Sources
Concrete: *Potter Form & Tie; PT Systems; Aggregate Industries*
Masonry cladding: *Corning-Donohue/Womder-Klein Brick*
Steel panels: *A. Zahner Company*
Aluminum windows and curtain wall: *Kawneer*
Glazing: *Viracon*
Cabinet work: *The Woodship of Avon*
Carpet: *Lee's*
Elevators: *Traction Elevators*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

Little more than a 100 years ago, the shores of the Mississippi River in Minneapolis hummed with a booming flour-milling industry. Powered by St. Anthony Falls, the mills made Minneapolis the "Flour Milling Capital of the World" and gave rise to such multinational corporations as General Mills and Pillsbury. By the 1960s, most of the mills had been torn down or gutted by fire.

In the 1990s, the area saw the beginning of a renaissance driven by private developers and individuals investing in riverfront housing. A local player, Brighton Development, took the plunge, converting several dilapidated structures into high-end housing and contributing to a process that helped create the Mill City Museum [RECORD, February 2004, page 122]. The 148,000-square-foot Humboldt Mill + Annex is Brighton's latest project here and combines lofts created within the historic Humboldt Mill (built in 1873) with a new Modernist structure on the site of a former train shed.

Program
Sandwiched between the Mill City Museum on the west and Jean Nouvel's Guthrie Theater (scheduled to open in 2005) on the east, the project needed to bridge old and new architectures, in terms of massing and materials. But before anything could be built, the mill's burned-out masonry shell had to be stabilized. When pigeons flew off of the windows, bricks would tumble to the ground, remembers Julie Snow, FAIA, who designed the project. Snow also had to overcome the fact that 200-foot-high concrete grain elevators block views of the Mississippi River to the north.



Solution
To keep the brick shell intact as it was being stabilized, construction workers erected a steel structure inside the five-story Humboldt Mill, and then installed a new structure of posttensioned concrete slabs and columns. Snow respected the character of the old building as she converted it, retaining its deep-sill windows and the empty timber-frame pockets in its brick walls. She created large living lofts, just two to a floor, echoing the large industrial spaces that used to be here. And she incorporated one of the mill's exterior walls as an interior wall in the elevator corridor that now links

Camille LeFevre writes about architecture and the performing arts for a variety of publications.

The new housing block sits between Nouvel's Guthrie (left in photo opposite) and the Mill City Museum (right in photo opposite). Snow's building employs an industrial idiom with brick and Cor-Ten steel (near right), while offering outdoor spaces such as recessed balconies (below) and roof terraces (far right).







1. *Lobby*
2. *Loft (old building)*
3. *Loft (new building)*
4. *Balcony*



FIFTH FLOOR



Interiors echo the industrial spaces that once occupied the old mill building, with open-plan living areas, 12-foot-high ceilings, concrete floors, and exposed ductwork (below). The penthouse (left) features granite countertops, stainless-steel appliances, and a large roof terrace.



the mill to the annex.

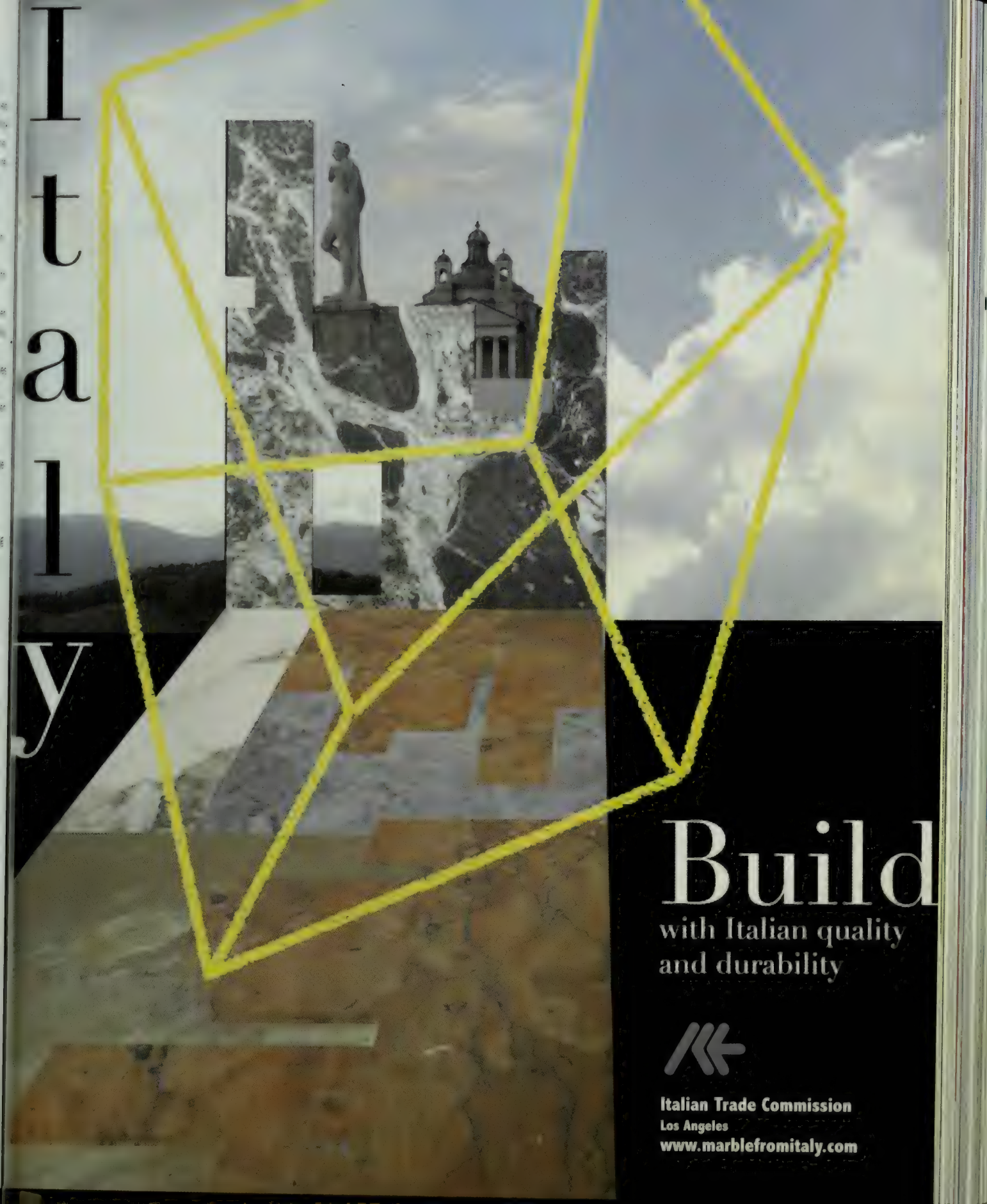
For the nine-story, 36,300-square-foot annex, Snow designed a building that combines pale brick with Cor-Ten steel and glass. "One interprets history rather than recreates it with additions in historic districts," she explains.

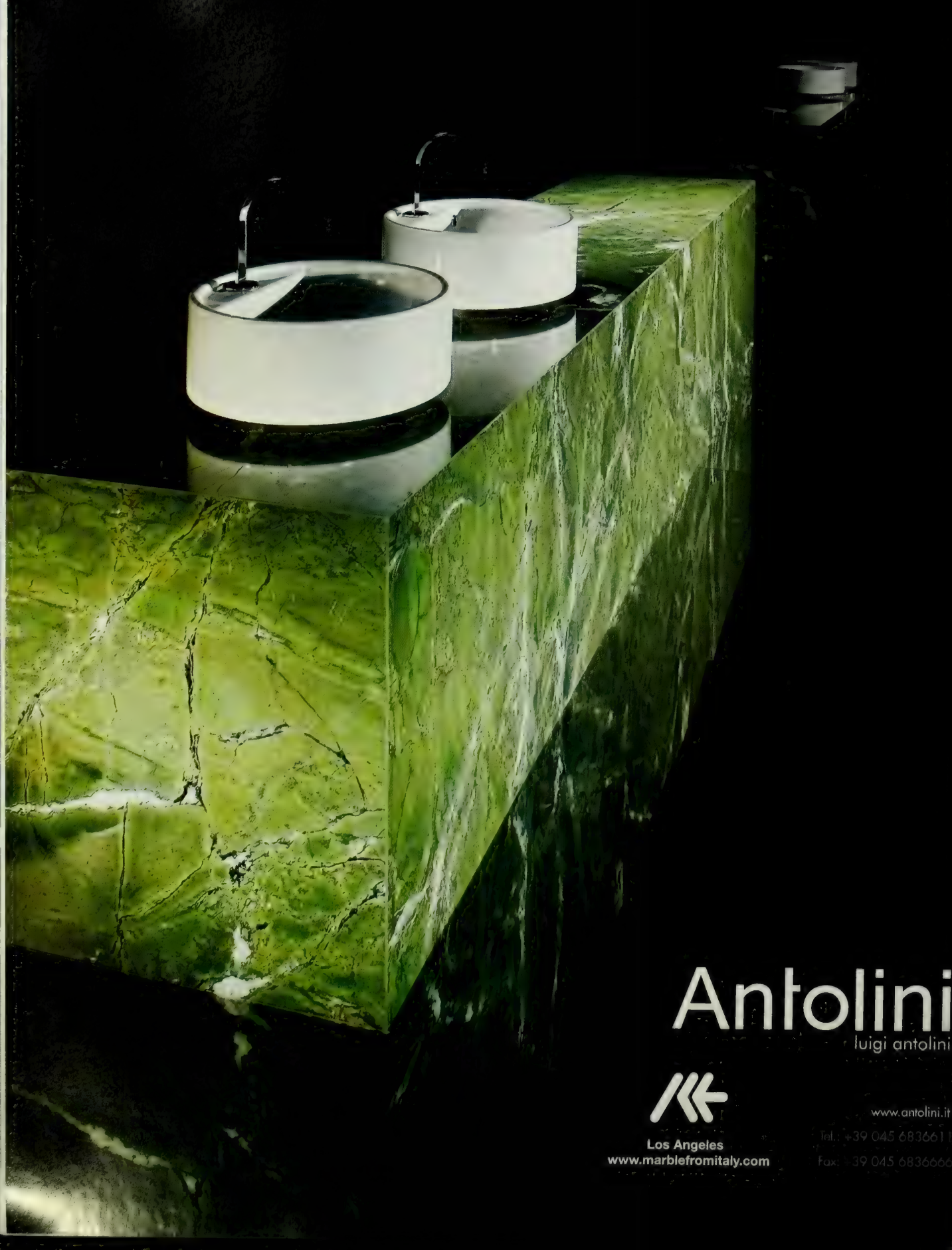
To provide the best possible city and river views for the 30 condominiums in the annex, Snow configured a variety of layouts, with larger units toward the top of the building. (The annex also has underground parking and first-floor retail.)

On the south side, one-bedroom condos with recessed terraces offer views of downtown Minneapolis. One-bedroom-plus-den condos on the north side look directly and unapologetically through 11-foot-high windows at the old grain silos 80 feet away; these units' rooftop terraces and balconies offer oblique views to the river, framed by the area's remaining old mill structures. The project also includes fifth-floor units with their own gardens and terraces on the roof of the mill building, and several duplexes with living spaces overlooking the city and bedrooms with views to the silos and river. Two penthouses occupy the top floor, along with five private cabanas and a public roof terrace.

Commentary

Targeting empty-nester couples, Snow designed flowing lofts where residents could compress a lifetime of possessions into spaces that would inevitably be smaller than the houses they had in the suburbs. And to help these people get to know one another, she created opportunities for social interaction, from the light-filled elevator lobbies and corridors to the communal rooftop terrace. With its dead-on views of milling-industry icons and across-the-street proximity to the Guthrie, Humboldt Mill + Annex offers modern living spaces embedded in a historic district with lots of natural, cultural, and commercial amenities. ■


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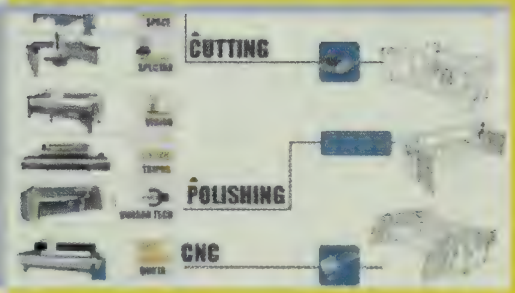
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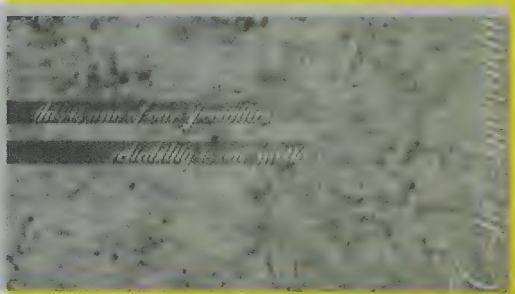
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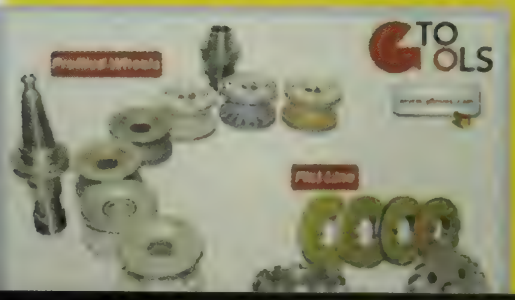
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THE ITALIAN STONE INDUSTRY

Italian stone materials are renowned throughout the world because of their wide range of colors and the size of their deposits. Italy is one of the leading world producers of raw materials, producing over 10.5 million tons of blocks per year, which are quarried and processed by almost 10,000 companies with 60,000 workers who are the most highly skilled in the world. Italy's raw material imports amount to over 2.3 million tons per year with a value of approximately 500 million USD while exports, which are almost all finished products, amount to 3.5 million tons per year with a value of over 2 billion USD.

Italy's modern stone industry has a long tradition behind it and has managed to maintain its world leadership thanks to its highly skilled workers and avant-garde technology. The latter is the result of the close relationship between stone suppliers and machinery manufacturers which has led to positive results such as the production of more and more advanced machinery, the setting up and perfecting of plants already operating, guaranteed continuous assistance, on-site experimentation of new prototypes and remote assistance through the web sites.

This is why Italy is also the world leader in the field of technology with over 400 specialized companies and a work force of around 8000. Thanks to the quality of its technology Italy is the most important country for the processing of stone materials too.

The market demand for stone materials varies a great deal, especially because of color trends, and this means that suppliers must be able to offer the widest possible range of materials. Over the years Italy has developed its role as intermediary and has become a world stone marketplace. In addition to the large quality of local materials Italy trades numerous materials imported from all over the world.

Many Italian stone materials have been on the market for centuries; some are no longer available because of limited resources while others, thanks to new technology and knowledge, have recently been placed back on the market or reintroduced after a period of inactivity of the quarries. Stone materials are divided up into various market categories. This division may not reflect scientific concepts but it is useful for a quick review of the main Italian "litho types".

The term marble is used to define all carbonate materials or other materials with similar physical-mechanical characteristics. The term granite is used to define all siliceous rocks which contain minerals such as quartz and feldspar. Finally, the stone category comprises all materials, generally not polished such as sandstone and porphyry.

Italian marble varieties come in a wide range of colors and textures like the white and veined varieties excavated from the Apuan Alps in Tuscany. The colored varieties include the green materials from Aosta Valley and Lombardy; the beige materials from Puglia (Serpeggiante and Trani), from Sicily (Perlato) and Lombardy (Botticino); the yellow materials such as Giallo Siena and Giallo Reale.

The Veneto region is rich in several types of colored stone such as red (Rosso Verona, Breccia Pernice, Rosso Magnaboschi) and pink (Nembro Rosato) marble; Rosso Rubino comes from Tuscany; Portoro and Rosso Levanto are excavated in Liguria.

Other colored materials include the Tuscan Arabescato, Orobici, Breccia Medicea and Fior di Pesco Carnico.

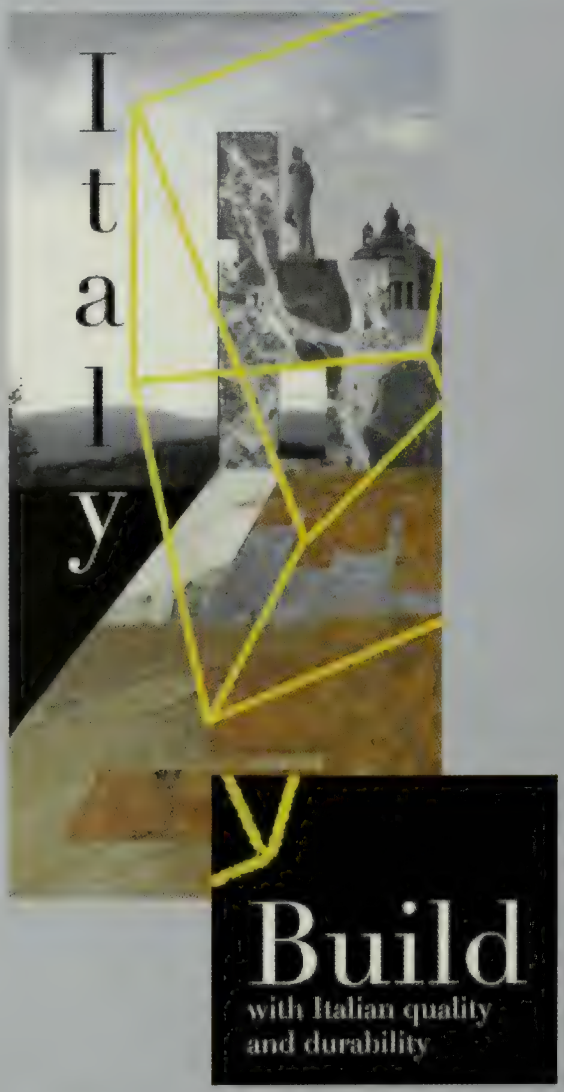
The most important deposits of Travertine, also a well known Italian stone, are found around Tivoli, Rome, Grosseto and Siena, all in central Italy.

Pink and gray Sardinian granites are famous throughout the world for their homogeneity. The pink Baveno granite comes from Piedmont.

The stone category includes the Pietra Serena which is the compact, homogeneously colored gray stone used in the Renaissance palaces and squares in Florence and the Finale, Dorata and Santa Fiora stones.

A few varieties of trachyte, a volcanic rock with brownish-yellowish shades, are also found in the Veneto region. The yellow-colored Pietra di Vicenza is used in many architectural works.

Other volcanic rocks, such as Peperino and Basaltina are quarried in the Lazio region.



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Exotic Woods Gain Popularity in the U.S.

A COMPLEX MIX OF FORCES—FROM AESTHETICS TO POLITICS—DETERMINES WHICH SPECIES OF WOOD ARE HOT AND WHICH ARE NOT FOR INTERIOR AND EXTERIOR APPLICATIONS

By Nancy B. Solomon, AIA

For architects who grew up in the United States, there are certain woods that seem as American—and as familiar—as apple pie: oak, pine, and maple, to name just a few. Early on, some foreign woods became well known in certain domestic applications—examples include teak for outdoor furniture and mahogany for fine cabinetry—but they were indeed the exception to the rule. Times have changed, however, and American architects are being enchanted by a broad palette of exotic species—from afrormosia to wenge—whose names, let alone attributes, many are still trying to learn.

What makes a wood exotic? According to Dan Meyerson, who has been selling wood veneer to architects from the New York office of Bacon Veneer Company since 1993, there is no official definition. "Generally speaking, the layperson thinks that it is a wood from a tropical rain forest," he explains. For some, however, *exotic* connotes wood from trees that are rare or endangered, no matter where they take root. For those in the building trade, the term can refer to the kinds of woods that are highly desirable—because they are extremely well suited, in terms of both aesthetics and workability, to structure, finishes, or cabinetry—but whose availability is limited. Even if a particular species can be found in abundance, an architect or woodworker may not often find a high-quality specimen within that species that can meet desired design and construction standards.

In keeping with Webster's primary definition of *exotic*—"foreign; not native"—any wood that is not indigenous to our country would fall into this category. Many types of woods are imported into the United States from both temperate and tropical countries, and they are used in any number of applications, from structural lumber to panel veneer. Interest in these woods is clearly growing: According to Foreign Trade Statistics, which is provided by the Department of Commerce's U.S. Census Bureau (www.fas.usda.gov/ustrade/ustimbico.asp), 43 percent more tropical hardwood lumber and a staggering 358 percent more hardwood flooring entered this country from abroad in 2003 as compared to 1993.



Gary Lee Partners specified pearl movingue veneer for Madison Dearborn Partners' Chicago lobby. The temperate wood from Africa was dyed in Italy.

Contributing editor Nancy B. Solomon, AIA, writes about computer technology, building science, and topics of interest to the architectural profession.

Ever-changing markets

While general demand is on the rise, the interest in and availability of specific species seems to wax and wane. "There are vague cycles," says Meyerson. For example, certain species are overharvested as time passes, forcing woodcutters to look elsewhere. As a result, continues Meyerson, "species that people did not know about before occasionally come on the market." In the late 1980s, African anegre was one of the most common sold woods, recalls Meyerson, but his father, who had been in the furniture business since the 1930s, had never heard of it. And at Milan's International Furniture Fair several years ago, designers became enamored with wenge, also from Africa. "Suddenly, the world wanted wenge, and there has been a steady demand for it since," says Meyerson.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 230 and follow the instructions. Other opportunities to receive Continuing Education credits in this issue are found on page 233.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Define the term "exotic wood."*
2. *Explain why exotic woods are in demand.*
3. *Discuss sustainability in relation to exotic woods.*

For this story and more continuing education, as well as links to sources, white papers, and products, go to **www.architecturalrecord.com**.







Cesar Pelli chose European ash for the veneer of the lobby paneling inside The Solaire (this page) at New York's Battery Park City. The blonde wood, which received a natural finish, has a strong cross-fire figure that suggests ripples in the sand. Harvested from a temperate French forest, the tree provided a sufficiently large sequence for the project.

Sources of mahogany, on the other hand, are drying up. Meyerson argues that this is not because of an actual worldwide shortage in timber stands but because the American species that had been most widely traded (big-leaf mahogany, which grows in Mexico, Central America, and South America) was added to Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) at the end of 2003. An international agreement administered by the United Nations Environment Programme (UNEP), CITES regulates trade of wild animals and plants that are considered endangered to various degrees. Species on Appendix I—including Brazilian rosewood—cannot be traded commercially between countries, while certain products made from species listed on Appendix II require an export permit.

Before such a permit can be authorized, however, the designated scientific authority of that country must be able to verify that the specimen was not obtained illegally and that its export will not be detrimental to the survival of the species. According to Global Trees Campaign (www.globaltrees.org), a partnership between Fauna & Flora International and UNEP World Conservation Monitoring Centre, an international standard for sustainable mahogany management does not currently exist, nor is a system in place to determine whether the export of a particular specimen of mahogany would be harmful. Such a system is currently being developed by the World Conservation Union (www.iucn.org).

There are also cycles in which clients seem to prefer either dark or light. "We have gone through a light-wood cycle for the past 10 or 15 years," reports Meyerson, "and have recently started going darker." The International Wood Products Association (www.iwpawood.org), based in Alexandria, Virginia, recently compiled a list of what its members consider to be the most common tropical woods currently being traded in the United States (see chart, page 226).

Aesthetic appeal

By looking at many of the exotics, one can instantly understand their allure: They offer a rich array of varied colors and patterns that can be very different from our domestic variety. Aesthetics, however, is not the only reason for the growing interest: Practitioners cite strength, stability, durability, and rot- and termite-resistance as part of the charms of these species. Surprisingly, availability and cost are also mentioned as factors.

Johnston Architecture, a firm in Wilmington, North Carolina, that designs beachfront houses, initially specified redwood for many exterior applications because the homegrown lumber could stand up to the hurricane winds and salt spray typical of harsh coastal environments. "But redwood got so much more expensive in the late 1990s that we









The tropical hardwoods on this page come from FSC-certified forests in Brazil: Housing (above) in Burry Port, Wales, is clad in red louro. Decking (near left) at the Nike European headquarters in Hilversum, Holland, is massaranduba. Sun blinds for a building at De Montfort University in Bedford, England (above far left), were fabricated with angelim pedra. The deck outside of Amsterdam's new Passenger Terminal (below far left) is lined with louro gamela.

started looking for other durable species," says partner Ian A. Johnston, AIA. He discovered, for example, that the bending strength of ipe is double that of pine, and mahogany does not warp or twist when ripped or expand and contract due to changes in humidity.

Many woods from the tropical rain forest, in particular, tend to be extremely dense because they grow very slowly beneath a canopy of larger trees. In addition to being stronger, more linear, and more impervious to moisture, wood from such dense species generally develop very consistent grain patterns. Their size and visual regularity allow for the production, in sufficient quantity, of a high-quality "sequence," or consistent pattern of veneer, across a particular application. "A wall that is made of lots of small sequences looks like a patchwork quilt," explains Meyerson, "while large sequences give more uniformity, thereby achieving a more pleasing and visually rhythmic application." Because of this preference for large quantities of consistent veneer, designers of large-scale interior projects often favor woods from the tropics.

Sustainability

One cannot begin to discuss exotic woods without quickly touching on the issue of sustainability and certification. Deforestation has been associated with many dire consequences, from decreased bio- and cultural diversity to increased erosion, flooding, and global warming. The situation is particularly acute in tropical countries because their rain forests are home to a greater diversity of species—many of which have yet to be discovered—while sociopolitical conditions in those parts of the world make it highly likely that a noncertified forest suffers from poor—if any—management practices. "Forests in these areas may simply be cut down for agriculture, ranching, or even fuel by poor people who see no other options," notes Liza Murphy, forest products marketing associate at the New York–based Rainforest Alliance (www.ra.org), a nonprofit organization that works worldwide to protect ecosystems and their inhabitants.

Despite increased concerns about the health of the rain forest—and international agreements such as CITES that attempt to protect endangered species—the decimation continues. At a recent conference in Bonn, Germany, marking the 10th anniversary of the Forest Stewardship Council (FSC), a Greenpeace representative reported that, using satellite imagery, the Brazilian government documented that more than 494,000 acres of Amazon land were deforested in a two-week period in July 2004 alone.

In an attempt to slow down or reverse this kind of devastation, several organizations have formed in the past 10 years to establish universal principles and criteria for responsible forestry practices. Perhaps

These are some of the most common tropical woods currently traded in the United States. Many species—both on and off this chart—are available as certified product. Some less-known species may exhibit characteristics comparable to those listed here, while others may offer unique qualities that could be highly desirable for a particular project. Choosing alternatives helps relieve pressure on those that are frequently specified.

LOW DENSITY
Lighter-weight woods for interior use.

- Ceiba (Sunauma)
- Elliottis Pine
- Jarrah (Eucalyptus)
- Faveiria
- Melapi
- Okoume
- Radlata Pine
- Virola

MEDIUM DENSITY
Many well-known woods used in joinery, furniture, and flooring.

- Afrormosia
- Agathis
- Andiroba
- Anegre
- Birch (Eastern European)
- Imbuia
- Iroko
- Khaya (African Mahongany)
- Lacewood
- Lauan
- Mahogany (Big-Leaf)
- Meranti
- Nogal (Peruvian Walnut)
- Nyatoh
- Ramin
- Rubberwood
- Sande
- Sapele
- Spanish Cedar
- Tauari
- Teak
- Wenge

MEDIUM / HIGH DENSITY
Variety of reliable species for structural, industrial, and other hard-wearing applications.

- Bubinga
- Cupiuba
- Kapur
- Kempas
- Keruing
- Purpleheart

HIGHER DENSITY
Strongest and most durable species for sea defense, dockyard work, bridges, and other extra-demanding situations.

- Azobe/Ekki
- Bangkirai
- Cumaru
- Greenheart
- Ipe
- Jatoba (Brazilian Cherry)

the best known is FSC (www.fsc.org), which is now headquartered in Bonn. Specific guidelines are tailored to each country to accommodate particular regional conditions. And accredited certifiers, including two based in the United States—Scientific Certification Systems and Rainforest Alliance's SmartWood Program—are trained to work with companies to assess whether or not they are in fact meeting their countries' specific criteria for forest management. If yes, the companies are issued a forest-management certificate for a designated period of time.

SPECIFYING CERTIFIED WOODS REQUIRES MORE LEAD TIME THAN IS NECESSARY FOR NONCERTIFIED WOODS.

According to UNEP, nearly 46 million hectares (113,668,475 acres) of forestland distributed over 61 countries has been certified by FSC as of September 1, 2004 (www.certified-forests.org).

FSC has also established a chain-of-custody certificate to ensure that products labeled as FSC-certified are truly created from certified timber. This is necessary because many lumber companies buy from both certified and noncertified sources. Certified timber, therefore, must be tracked from the forest through production to the end user so that buyers of certified products are indeed getting what they paid for. The same groups that assess forest companies for the management certificate also handle chain-of-custody certification.

Murphy's position at the Rainforest Alliance was established this year, in large part to assist architects and other design and construction professionals in identifying and specifying certified wood products from both here and abroad. Suppliers of such products can be found on the Web site of their SmartWood Program (www.smartwood.org). Certified forest products can also be located through the Forest Certification Resource Center (www.certifiedwood.org), which is sponsored by Portland, Oregon–based Metafore (www.metafore.org), another nonprofit working to protect the world's forests.

In addition to requesting certified woods of well-known species, architects are encouraged by Rainforest Alliance, Metafore, and other like-minded environmental groups to consider both lesser-known and lower-grade woods. In *Wood for Building Green*, a practical guide recently published by Metafore, the organization explains that, by specifying a larger range of types and grades, design professionals will help increase the value of diverse forests, which in turn will provide greater economic incentives to maintain healthy forest ecosystems worldwide.

According to Murphy, specifying certified woods—especially those from the tropics—requires a little more lead time than that necessary for noncertified woods because the outlets are more limited. But she dismisses the idea that it presents a significant increase in cost. Although wood companies must pay a fee to go through the certification process, Murphy argues that suppliers are not seeing an overall price premium: "In many cases, the review process finds ways to lower costs," she notes.

The Wood Design Awards

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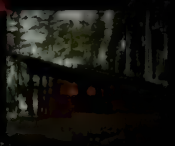
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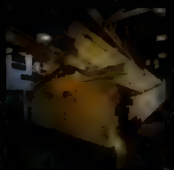
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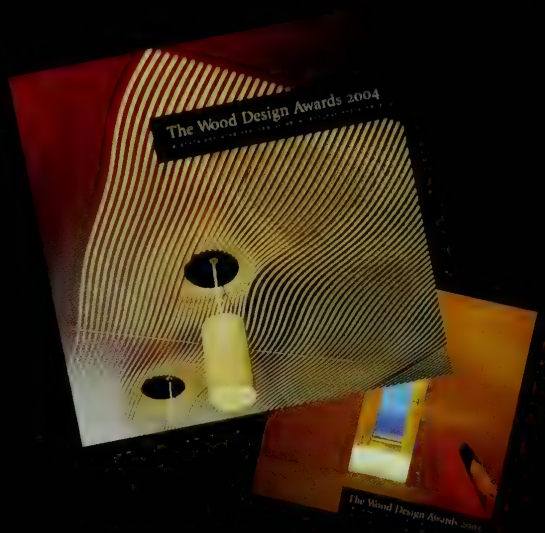
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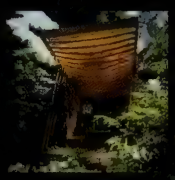
Modular 1 House
Studio 804, Inc./ Dan Rockhill & Associates, Lawrence, KA

Yin Yu Tang House
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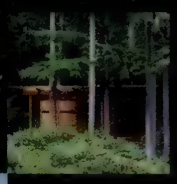


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Paul Raff Studio Inc., Toronto, ON

Sauna Pavilion
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Salmela Architect and Coen + Stumpf + Associates, Duluth, MN

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Eskew+Dumez+Ripple, New Orleans, LA





Canopy Colonnade
Arthur Erickson Architectural Group/ Nick Milkovich Architects, Vancouver, BC

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Representatives from Mountain Lumber, based in Ruckersville, Virginia, traveled to China to purchase Chinese elm timbers that had been dismantled from ancient structures (lower right). The logs, which had been assembled with mortise-and-tenon technology, were trucked to Canton (upper right) and then sailed to the U.S., where they were milled into floor planks. The first installation—into a Charlottesville shop (below)—was completed in September.







There are people in the industry, however, who respectfully disagree: "It's cumbersome, unrealistic, and requires a lot of money," says Meyerson of the FSC certification process. "FSC doesn't have a monopoly on proper forest management techniques." Large suppliers like Bacon are particularly frustrated that LEED, the sustainable-design rating system developed by the U.S. Green Building Council, only recognizes FSC certification. "People look at FSC as the broad-brush cure-all to a very complex and varied situation," says Meyerson. He believes that many wood companies have successfully managed forests for generations and, therefore, "don't need anyone else telling them they are doing it right." Murphy concedes that this may be true in temperate zones, but emphasizes that greater care must be applied in the tropics.

Some architects who are particularly concerned with sustainable goals actually prefer undertaking their own research. "I don't find relying on FSC as good as doing your own homework," says architect Jay Dalgliesh, AIA, of Dalgliesh, Eichman, Gilpin & Paxton in Charlottesville, Virgina. He will request and review literature on woods from sources that he has worked with for years. And he has been known to visit logging sites in person. Among other factors, Dalgliesh makes sure that the planting and harvesting operations do not encourage invasive species or contribute to erosion.

David W. Hess, senior associate at Cesar Pelli & Associates in New York, thinks highly of FSC, but notes that, during the design phase of The Solaire at Battery Park City in New York—in the fall of 2000—relatively few FSC-certified woods were available, and they were being offered by smaller companies that lacked easily accessible showrooms. The firm opted for a noncertified European ash, supplied by Bacon, as the veneer for the paneling in the lobby of the 27-story residential tower. This ash—which is a different genus from its American counterpart—comes from a temperate forest in France that has been in operation for generations. "Western Europe has incredibly good sustainable forestry practices. It made sense to us to use the wood, even though it was not FSC-certified, because it was handled in a way that was ecologically sound," says Hess.

To maximize the green content of the paneling—and obtain credits for the building's overall LEED rating, which was ultimately set at the gold level—the firm specified a medium-density-fiberboard (MDF) substrate. According to Hess, this engineered product is made from 100 percent recovered and recycled wood fiber and, unlike many FSC-certified products, does not rely on formaldehyde, which has its own environmental drawbacks, as a binder. Today, with better access to a broader selection of sustainable materials, the firm plans to specify FSC-



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A wine cellar incorporates oak lumber from an Irish brewery and English cider mill.

certified English beech for another residential tower at Battery Park City.

One interesting twist to the potential sustainable-exotic quandary is the reuse of lumber from demolished foreign structures. Mountain Lumber Company in Ruckersville, Virginia—founded by Willie Drake in 1974—has salvaged highly desirable woods from some highly unlikely locations. For example, when Guinness Breweries in Dublin, Ireland, and Bulmer Cider Mills in Hereford, England, replaced their traditional wooden vats with state-of-the-art stainless-steel containers a few years back, Mountain Lumber imported 170,000 board feet of English brown oak. From this antique wood, they were able to develop several lines of flooring, including one with a rich reddish patina that resulted from the interior face of the wood soaking for years in cider. Some of this wood—plus a large wine cask made of French oak that Mountain Lumber brought back from Chateau Talbot in Bordeaux, France—found its way into a new wine cellar that Jay Dalgliesh designed for a refurbished house in Charlottesville, Virginia, which was completed in 2002.

And, just this year—after three-and-a-half years of negotiating—Mountain Lumber obtained 100,000 board feet of ancient Chinese elm timbers that had been dismantled from 400-year-old Ming Dynasty structures in China's Luliang Mountains to make way for modernization. Some of these beams are 20 feet long and 25 inches in diameter—large enough to make flooring planks that are uncommonly long and wide. Its heartwood is a golden yellow and its grain dark brown. "The wood is gorgeous," says John Williams, general manager at Mountain Lumber. "It has a certain glow to it that makes it come alive." The first installation of this flooring was completed in September, for Verity Blue—a Charlottesville company that specializes in Italian tableware. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "Exotic Woods Gain Popularity in the U.S." using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 318).**
- **Fill out and submit the AIA/CES education reporting form (page 318) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. According to Webster's definition of *exotic*, which describes exotic wood?
- **a.** wood from a tropical rain forest
- **b.** wood from trees that are rare or endangered
- **c.** wood that is highly desirable, but availability is limited
- **d.** wood that is not native or indigenous to our country

2. Imported hardwood flooring increased from 1993 to 2003 by what percentage?
- **a.** 353 percent
- **b.** 43 percent
- **c.** 7 percent
- **d.** 100 percent

3. Which of these woods did designers become enamored with at the Milan Furniture Fair?
- **a.** anegre
- **b.** wenge
- **c.** teak
- **d.** afrormosia

4. What does the Convention on International Trade in Endangered Species regulate?
- **a.** trade of tropical forest lumber
- **b.** trade of flora that are determined to be threatened
- **c.** the International Wood Products Association
- **d.** trade of mahogany

5. The allure of exotic woods includes all except which?
- **a.** strength and durability
- **b.** varied patterns and colors
- **c.** rot and termite resistance
- **d.** recognizability and familiarity

6. Woods from tropical forests are desirable for large-scale interior projects for which reason?
- **a.** they are stronger
- **b.** they develop more consistent grain patterns
- **c.** they are impervious to moisture
- **d.** they look like a patchwork quilt

7. How many acres did the Brazilian government document was deforested in two weeks of July 2004?
- **a.** 400
- **b.** 4,000
- **c.** 400,000
- **d.** 40,000

8. What percentage of all wood comes from certified forest land?
- **a.** 25–30 percent
- **b.** 17–20 percent
- **c.** 10–12 percent
- **d.** 3–4 percent

9. What does a Chain of Custody certification ensure?
- **a.** that the lumber was purchased legally
- **b.** that the wood came from certified timber
- **c.** that the lumber is not from extinct species
- **d.** that the lumber is not from tropical forests

10. Forest Stewardship Council–certified products include which of the following?
- **a.** French forest ash supplied by Bacon
- **b.** engineered board with formaldehyde
- **c.** reclaimed English lumber
- **d.** antique Chinese lumber



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You can earn AIA Continuing Education Learning Units by reading designated articles and sponsored sections in *Architectural Record* and on *Architecturalrecord.com*, and answering test questions following each article. This month's sponsored Continuing Education sections cover a range of architectural and design challenges and innovations and have been approved by AIA for Continuing Education Credit. They are presented by manufacturers and professional organizations who share *Architectural Record's* strong commitment to serve the educational needs of architects. For more information, visit *www.construction.com/ContinuingEd.*

Hardware, Hinges & Handles

Expand your knowledge of factors affecting hardware choices and look to a design theme that manufacturers say is really catching on: carry a theme throughout the project with custom finishes and hardware in an array of new looks. There is a logical sequence in scheduling hardware installation. Learn it, and understand basic hardware applications in a continuing education unit brought to you by leading hardware distributors. ***Page 235.***

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Northern hard maple flooring... the multipurpose surface

Maple flooring has been the ideal choice for sports and athletic facilities for over a century due to its strength, durability and beauty. Correctly specified, installed and maintained, maple floors can provide a dependable flooring surface for more than 60 years, despite varied uses. ***Page 251.***

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Insulation earns high scores in green projects

Leading edge environmentally sensitive building projects today often incorporate special equipment to recycle water and heat, capture solar energy and manage the climate throughout the structure. But there is one familiar category that deserves early attention in every green design project – building insulation. ***Page 257.***

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Laminated glass with a Polyvinyl Butyral (PVB) interlayer: Keeping unwanted noise at bay

Noise is an unavoidable part of the daily environment, but it can be especially intrusive when it finds its way indoors. Transferred ground vibrations and sound transmitted through windows are the greatest contrib-utors to noise in building spaces. Hence, improving the ability of windows to resist the passage of sound into building spaces is a high priority. ***Page 263.***

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Performance override: door specifications meet the "real world"

Architectural wood flush doors are part of a superior interior built environment and now there's an improved standard to guide their specification. A major overhaul to an industry interior architectural door standard–*I.S. 1A-2004 Industry Specification for Architectural Wood Flush Doors*– is ready, and its focus is on performance-driven specifications. ***Page 269.***

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Bronze gate latch for interior doors.
Courtesy Sun Valley Bronze

Hardware, Hinges & Handles.

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Hardware, Hinges & Handles.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 247, then follow the reporting instructions on page 318 or go to the Continuing Education section on ***archrecord.construction.com*** and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Learn a logical sequence in scheduling hardware*
- *Understand basic hardware applications*
- *Understand factors that affect hardware choices*

Doors — we use them countless times every day at home, at work and even when we go shopping or out to eat. They provide access as well as privacy and security. On the outside, they seem remarkably simple and we rarely take note of them. But doors are one of the most vital parts of any building and they are required to perform a number of tasks, from being aesthetically pleasing, to being fire-resistant as well as being sturdy enough to secure an area from unauthorized access. In order to meet all of the demands put on them, there are doors made from several different types of material as well as countless types of hardware for them — handles, hinges, kickplates, doorstops — the list goes on and on. Specifying the right door and hardware for the right job can be incredibly difficult and the choices may seem overwhelming, but becoming familiar with the terminology and types of hardware can make the process much easier. We'll start by breaking the door down into sections:

- *Specifying a door*
- *Hanging the door*
- *Securing the door*
- *Controlling the door*
- *Protecting the door*

Going through these steps will help ensure that no piece of hardware is forgotten or overlooked.



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Specifying a door

A door is typically the first thing people see when they enter a building, home or office. It has the ability to make a strong first impression about the people behind it. Realizing this, more and more architects are specifying doors that make a statement rather than simply provide access and security. There are numerous companies that specialize in custom exterior doors made of exotic woods with specialty hardware and finishes.

But what of the interior doors? "Interior doors, over the years, have been relegated to the standard six-panel design," says Jacob Kluger of Supa Doors. "Now, more and more architects are looking for unique interior door designs for their residential and commercial projects, without significantly affecting their budget. Amazingly, choosing a more appealing stile and rail door can be more affordable and have a bigger impact than upgrading other aspects of the door unit."



Cherry double doors. Courtesy JELD-WEN.

An important aspect to keep in mind when specifying any door is its usage. What sort of building is it being used in? Will it be a high traffic area? Is there a need for it to be reinforced for security purposes? What material will be durable enough to withstand the elements if it's to be an exterior door? Does it need to be fire-rated? All of these questions must be considered carefully when specifying doors, whether for commercial or residential usage.

Hanging the floor

There are four basic applications commonly used to hang a swinging door: concealed floor closers and pivots, continuous hinges, pivots and what we will call standard hinges. Continuous hinges and concealed floor closer applications are exactly what their name implies and we will not address them in this article. Pivots would be the hanging method most commonly used on what is called storefront or aluminum and glass doors. These are the entry doors frequently used in a retail or fast food business. Buildings with glass and aluminum doors generally use the pivot application.

What is referred to here as a standard hinge is simply a hinge that has two leaves and attaches to the door and frame. This is one of the more common applications used, generally in a home or office, and this is the type we will be discussing. Its technical name is a full mortise hinge because it mortises (mounts) in a cutout in the frame and a separate cut out in the door. There are many variations of the use of this hinge that will need further investigation if there are special circumstances in the door opening. However, most homes use what is known as pre-hung doors and frames. This means the door arrives already hung on the frame and the door and frame are then installed as a unit.

Many times, residential front entry doors also come installed in the frame as a pre-hung unit. When specifying a door, it is important to note the height, width, thickness and which hand the door needs to be. Residential doors are typically 1 3/8 inches thickness on

As with any design element, there are always new trends emerging in the door industry. Here are some of the latest trends Jacob Kluger of Supa Doors says they're seeing:

- **Movement away from stain:**
 Paint-grade doors (especially MDF) are now the most prevalent door in the market, and are replacing stain grade applications across the nation.
- **Increasing heights:**
 As ceilings rise, door openings rise as well. Architects are drawing attention to their openings by specifying 8'0" tall doors and, in many cases, simply adding a couple of inches to a standard 6'8" or 7'0" door. For commercial projects, 7'6" tall doors are becoming an extremely popular option.
- **Deciding less is more:**
 By modestly modifying "shaker" style doors by using an extra-step sticking and flat panels, architects can add a quiet impact in both contemporary and mission-style applications
- **Returning to the classics:**
 Combining traditional Victorian arched looks with extending ogee stickings and detailed double-hip raised panels is one of the most popular options specified
- **Being bigger and bolder:**
 With the advent of several raised and pocket door moulding options, more homeowners are delighted with "statement" doors that utilize heavy bolection raised mouldings.

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Clear Alder door and sidelights, grilles, round clavos. Courtesy JELD-WEN.

interior doors and 1 3/4 inches thickness on entry doors. The hand of the door refers to the swing direction. For residential use it is typically right hand swing or left hand swing, but we'll look at handing more in depth a little later.

Having specified a door, be sure to take note of the size of the hinges as well if the door is not a pre-hung door. For residential entry doors they are usually 4 x 4 – 4 inches in height by 4 inches in width when the hinge leaves are open (the first dimension given is always the height) — and 3 1/2 x 3 1/2 inches on interior doors. There is also the color to consider. The most common finish of hinges used in residential building is satin brass clear-coated BHMA (Builders Hardware Manufacturers Association) finish number 606. However, residential locks more commonly use a BHMA 605 finish which is bright, polished brass, so it may be necessary to change the finish of the hinges to match a residential lock finish. From a design perspective, residential hinges can be spruced up by adding a decorative pin tip. On any standard hinges, there are pins which hold the two leaves together. Many manufacturers offer decorative tips which can be added to hinges with a threaded pin insert. Specialty decorative hinges are also available through vendors who specialize in custom hardware.

Many homeowners today are opting for a more retro look to their doors. As Jim Hackett with JELD-WEN notes, "There is currently a very strong interest in old world accents such as dark bronze or rust bronze. Forged materials are very popular." When specifying hardware for these custom doors, Hackett suggests selecting a dark, oil-rubbed bronze finish hinge to accent the finish of the door.

According to Hackett, the demand for stylish retro hardware is only increasing. He's found that "Even in new housing construction there is a trend for a forties-type look and feel with porches and decorative doors and hardware." One of the more popular accents on doors right now are clavos, a 1 inch or 1 3/4 inch circle with a hammered finish or diamond shapes on planked-style doors. What's behind this move towards retro styles? "Individuality," says Hackett. Everyone wants their house to look unique and a door makes a big impact.

When specifying custom hardware for the outside, think about using them inside the house as well. Hackett suggests architects use similar hardware on windows, in kitchens and bathrooms, noting, "Carrying the hardware theme through the entire house is a new design theme that is really catching on."

On the commercial side, the majority of swinging doors with full mortise hinges are 1 3/4 inches thick and use 4 1/2 inch by 4 1/2 inch hinges. Commercial hinges of the same application offer a greater variety of finish choices. In choosing hinges for commercial applications, it is important to know the usage of a door prior to specifying a finish. The fire rating of the door will influence the base material used in the hinge. Only ball bearing steel or anti-friction bearing hinges can be used on a fire-labeled door, as indicated in NFPA 80 Standard for Fire Doors and Fire Windows. Commercial hinges are also available electrified. They serve as a means to conceal and transfer wires through a door and frame. Door monitoring is another function of electrified hinges, used as indicators of whether a door is open or closed. However, it is important to note that electrified hinges are not intended to be load-bearing and are primarily used in the intermediate middle hinge position.

There is currently a very strong interest in old world accents such as dark bronze or rust bronze. Forged materials are very popular



Solid bronze, cast pull. Venetian Hotel, Las Vegas. Courtesy of TRIMCO.

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A common problem discovered after installation of a door is that the hinges were not mounted properly. Robert Commons worked in the construction industry for years and felt there wasn't enough attention to detail when people were installing hardware. "There were these beautiful, custom made doors that people would have installed on their houses, but then the hinges wouldn't work properly because they weren't installed correctly," his daughter Aimee Commons explains. So, to try and alleviate the problem, Robert set about inventing an adjustable hinge that could compensate for mistakes made by installers. He was successful and in April of 2001 he was awarded a patent for his adjustable hinge. In addition to fixing installation errors, Aimee explains, "It's also designed to allow for adjustment when a door will eventually sag or provide equal load distribution so a door is not just riding on one hinge." Manufactured from top-quality stainless steel, the hinges can be used on both interior and exterior doors and are available in numerous sizes and finishes.

through. Generally, when there is a pair of doors, the active door is the one on the right, following the unwritten rule of people traffic flow. It is assumed that most people are right handed and the tendency is to reach for the right side door, approaching it from the secured side. The in-active door is often secured by what are known as flush bolts. These bolts or rods are concealed in the door and, when extended, latch into the frame at the top of the door and into a plate in the floor. Surface bolts are the same application, but are mounted on the door surface and visible. Many homes have surface bolts on pairs of French or glass and wood patio doors.

Securing doors typically involves locking or latching the doors. The focus here is on two basic types of locks: bored and mortise. Bored locks are installed into a hole drilled through the face of a door. They interact with a bolt installed in the edge of the door called a latch bolt. A bored lock is simply a two-piece handle and spindle which is attached by threaded screws through the hole in the face of the door. The latch bolts (commonly called plungers) of locks extend into the metal piece in the frame which is called a strike (commonly known as keepers).

Knowing finishes and their base materials is important when choosing hinge application and finishes.

When dealing with an exterior door, a stainless steel hinge is often a good option. If the door swings out, a hinge function known as non-removable pin, or NRP, can help secure the door. This prevents the hinge pin from being removed, making it impossible to take the door off the frame.

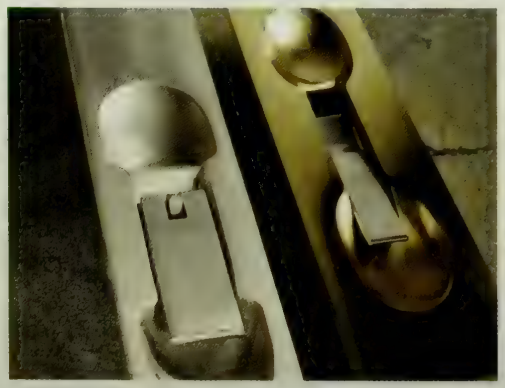
Knowing finishes and their base materials is important when choosing hinge application and finishes. BHMA has a standard called A156.18 Materials and Finishes which explains the finish symbols and base materials. This is a good reference standard to have in a library. Also available from BHMA are physical finish sample boards. These finishes are used for all hardware finish descriptions in addition to hinges.

Securing the door

The next area of focus is on securing the door. If there is a pair of doors, securing the door includes both doors. The terminology used in the industry is to call one door the active door and one the inactive. The active door, of course, is the one that will be used for traffic to move

A mortise lock, on the other hand, has a rectangular-shaped lock body installed in a pocket mortised out of the edge of the door. Mortise locks are more expensive lock, but they are a good application. The handle or knob and plate that you see is attached by threaded bolts extending through the lock body and a spindle connects the two handles. On a home, a mortise lock will be an expensive item that would generally be specified for an entry door. Many residential entry doors use a handle and thumbpiece combination with a deadbolt, as the best protection comes from the deadbolt. For maximum security, when specifying a deadbolt on a home, have a reinforcing or security strike installed as well. It is inexpensive and basically reinforces the strike in the frame with stronger metal and longer screws. This offers better security against someone prying or kicking the door open. Locksmith or home builders store generally carry this item.

The most widely-used finish for residential locks has typically been 605 bright polished brass. This finish is available with lifetime



Architectural pulls. Courtesy of Hafele America Co.



Architectural handle. Courtesy Doug Mockett & Company, Inc.

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finishes, which are highly recommended. The lacquer of non-lifetime finishes eventually wears off and discoloration will occur. Exterior locks will be exposed to pitting as well over time, with wind-driven minute particles constantly attacking the finish in addition to moisture and skin oils from the users. Today, the trend is towards alternative finishes and materials. Forged metal materials and finishes often hold up better with less maintenance than brass.

Securing doors in commercial work brings more products, applications and variations. Again, start with the use of the building and the door and remember that all fire-rated doors must latch. There are four basic functions of locks: entry, storeroom, privacy and passage. Entry function locks involve use of a turn button on the inside of the lock trim in addition to a key for locking and unlocking from the exterior side. Storeroom is a function of a keyed lock that always remains locked and entry is only available with a key. It is not possible to leave this function unlocked. As the name implies, the most common use is for securing storerooms as well as mechanical, janitors and electrical rooms. Privacy function locks do not use a key on the outside but generally use a turn button for locking when inside a room, most typically a bathroom like the ones in most homes. Most will come with an emergency means of entry from the outside, usually a hole in the knob or lever that a pin type instrument can be inserted into, which unlocks the door from outside the room. Passage function involves no locking at all.

Knowing finishes and their base materials is important when choosing hinge application and finishes.



Bronze french doors with ring tail levers. Courtesy Sun Valley Bronze.

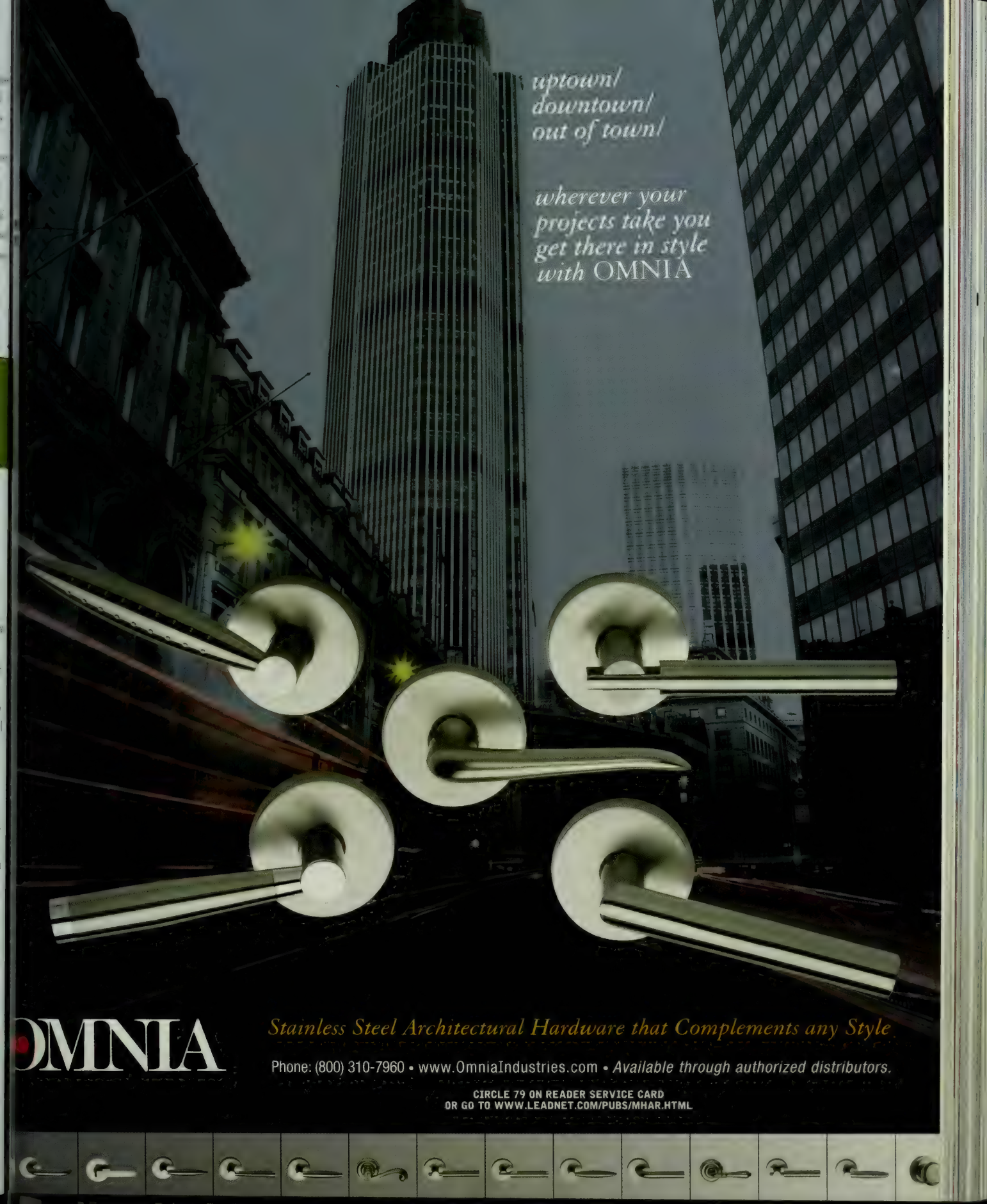
Generally all locks should allow exit from a room without the use of any special keys or tools. An expression used in the commercial industry in describing lock functions for this application is "always free from the inside."

When securing a commercial building from the outside, however, there are a number of special keys and tools that can be used to maintain access control. One such system is "an identification and locking system for digital access control," explains John O'Meara of Hafele America Co. "The core technology is transponders manufactured by Texas Instruments and LEGIC. Low Frequency and High frequency transponders store and transmit data and they can act as an ID in software systems such as membership programs and they can act as IDs or keys in access control systems." With today's technology, a very flexible system can be created to meet the needs of any company. As O'Mara says, "Solutions range from one lock and one user, to 10,000 locks and 30,000 users."

Locks come in three basic grades: grade 1, heavy duty; grade 2, medium duty; grade 3, residential. What grade is specified should depend on the use of the building. For commercial applications, the design of the lock handles will be lever to meet ADA (Americans with Disabilities Act) accessibility guidelines. More lever lock designs are used in residential homes today as a practical preparation for retirement and for the design aesthetics lever locks can offer in home decorating.

Locks can also be electrified. Mortise or bored locks are available electrified. An often overlooked consideration in specifying electrified locks is that a raceway has to be drilled across the width of the door to accommodate the wires, and an electrified hinge has to be used as well to continue the wire run through the frame. Securing devices can also be electrified and used in conjunction with electrified access control. Electrified locks have voltages that must be considered and they must be specified fail safe or fail secure as well. Fail safe is a term applied to locks that require power to lock and, upon loss of electricity, unlock. The fail secure term indicates a condition that requires power to unlock. One example of the fail secure function is a security institution that must remain secure even if power is lost. Again, knowledge of life safety and fire codes is necessary in choosing mechanical and electrified locks for commercial use.

Securing a door commercially may involve specifying exit devices (or panic devices as they are often referred to). Exit devices were designed for life safety to allow simple exit from a building for many people. Use and application of exit devices will depend on life safety and fire codes. Only exit devices that bear a label indicating that they are approved and tested for use on fire-rated assemblies can be used on fire-rated doors. When to use an exit device and how many are necessary in a building is determined by occupancy use and occupant load. More information on that subject can be found in *NFPA Life Safety Code 101.*


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Controlling the movement of the door

The next section that must be specified is how to control the movement of the door when opening and, if necessary, when closing. All applicable codes should be consulted before specifying which doors need closers. NFPA 80 states fire-rated doors must be self-closing. The use of the door will also determine if it needs a closer. Closers can be concealed or surface mounted. There are four basic applications of surface mounted closers:

- ***Regular arm mount*** *— applied to the pull side of a door and the closer mounts on the door while the arm is mounted to the frame.*
- ***Parallel arm mount*** *— applied on the push side of doors and while the closer is also mounted on the door, the arm lies parallel to the door rather than protruding as it does in regular arm mount.*
- ***Top jamb mount and the closer body*** *— mounted on the frame and the arm on the door. Aluminum and glass doors use the top jamb mount most often.*
- ***Concealed closers*** *— mounted either in the top jamb of the frame or in the top of the door. There are circumstances where you want to use concealed closers for aesthetic reasons; however, for the majority of commercial applications, surface mounted closers suffice.*

Concealed closers are much more expensive and require additional prep work in the door and frame. If specified, it is important to note that enough room must be left at the top of the door to accommodate the closer whether the door is hollow metal or wood. The top horizontal section of a wood door is called the top rail. If windows or panels are to be used in the door, the top rail has to have sufficient room for a closer. Also, the doors require reinforcing to accommodate the closers if thru-bolts are not used. Wood doors need blocking as reinforcement.

So, when specifying closer application, door material and design should be important factors influencing the choices. It is also important to know where the closers will be mounted and make sure all preferences are specified. For aesthetic reasons, closers are mounted on the room side in corridors to maintain a clean look. In stairwells, they should be mounted in the stairwell to keep them out of sight. Bathroom closers with in-swinging doors should be mounted room side. Installation of the closers is as important as choosing a closer and it should not be left to the installer to make an installation location choice.

Concealed floor closers are another option for controlling the door. There are two applications — center hung and offset. They are used with a top pivot and serve to hang the door as well as control it. Floor closers are a good application for entrances and high traffic exterior doors. They offer good durability and leave few exposed parts for vandals. Closers with separate adjustment valves for closing speeds are a better choice because they allow more control.



Architectural pull. Courtesy TRIMCO.

Closers are sized and handed. Opening force and closing speeds will depend on the size of a door. Fire doors are permitted to have the minimum opening force allowable by the authorities having jurisdiction. To meet accessibility requirements, the maximum opening force for interior hinged doors that are not fire doors is 5.0 pounds. There are no requirements for opening force for exterior doors. Closer bodies can be made of cast iron or aluminum material and slim design models are available if aesthetics are a factor. Covers can give the closer a more pleasing look and are available in metal or plastic. Because a closer is located in proximity to the other hardware and generally not next to it, non-plated finishes match the remaining hardware closely enough to be the most widely and economically prudent closer finish type used. Typically, a non-plated finish is used on commercial closer applications, but they are also available in plated finishes if aesthetics are a concern. If a plated finish is specified for closers, it is important that all exposed parts of the closer provided be plated, including the arms. ■

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at: http://archrecord.construction.com/resources/conteduc/archives/0411hardware-1.asp

To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, contact Marissa Wyss at *Architectural Record*, (212) 904-2838 or email marissa_wyss@mcgraw-hill.com. The following quiz questions include information from this material.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 246. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record*'s website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. After specification, what is the first step in door installation?
 - **a.** Control the door
 - **b.** Secure the door
 - **c.** Protect the door
 - **d.** Hang the door
2. Which of the following does not meet hardware requirements for fire-rated doors?
 - **a.** Closer
 - **b.** Deadbolt
 - **c.** Latchset
 - **d.** Steel ball bearing hinges
3. When facing a pair of doors from the secure side, the active door is generally which door?
 - **a.** Right side door
 - **b.** Left side door
4. How many basic grades of locks are there?
 - **a.** 4
 - **b.** 3
 - **c.** 2
5. What is the maximum opening force in pounds permissible on interior hinged doors to meet accessibility requirements?
 - **a.** 8
 - **b.** 10
 - **c.** 5
 - **d.** 3
6. You are facing a door in a corridor that has a keyed lock and swings out into the corridor to your right. What is the hardware handing of this door?
 - **a.** Right hand
 - **b.** Left hand
 - **c.** Right hand reverse
 - **d.** Left hand reverse
7. Installing pull handles and push plates on fire-rated doors meets code.
 - **a.** True
 - **b.** False
8. A door with an electric lock installed that requires power to lock and unlocks with loss of power.
 - **a.** Fail secure
 - **b.** Fail safe
9. A storeroom function lockset always remains locked and requires a key to operate from both sides of the door.
 - **a.** True
 - **b.** False
10. When selecting a door closer, what door detail is critical to ensuring a working application?
 - **a.** Rail dimension
 - **b.** Stile dimension
 - **c.** Door thickness

HAWA - Variotec modular track system allows panels to travel independently and negotiate curves with ease. Supports glass or wood panels up to 330 lbs. per panel.



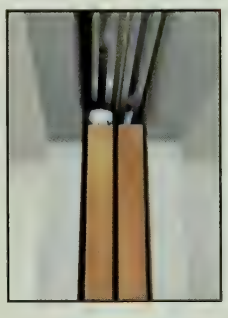


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Contemporary Furniture Hardware

Nothing adds a more sophisticated finishing touch to a building – no matter whether it is commercial, residential, or office – than a terrific looking door handle. The door handle is the first thing of your building a visitor touches and feels. The handle implies the quality of the building's design, inside and out. Doug Mockett & Company, innovative designer and maker of contemporary furniture hardware, has introduced a stylish line of door handles that will make your building stand out. Doug Mockett & Company is a leader in high-end architectural hardware, from wire management, to kitchen, bath and closet, to table legs, drawer pulls and designs to integrate computers into furniture. Doug Mockett & Company, 310-318-2491, www.mockett.com. **CIRCLE 123**





Solid Bronze Hardware

The Sun Valley Bronze collection includes door hardware, kitchen and bath accessories, cabinet knobs and pulls, window hardware, hinges, solid bronze sinks and faucets, and the award-winning gatelatch. Sun Valley Bronze is a family owned and operated company that is proud of the fact that all of their products are made entirely in America. Sun Valley Bronze gladly accepts custom and one-of-a-kind projects. The elegant example of a Dutch Door, featured here, shows the Sun Valley Bronze Patented Adjustable Ball Bearing Hinges, Surface Bolts, and Keyed Mortise Lock Entry Sets. The finish shown is Silicon Bronze S3. Sun Valley Bronze, 208-788-3631, www.svbronze.com. **CIRCLE 124**

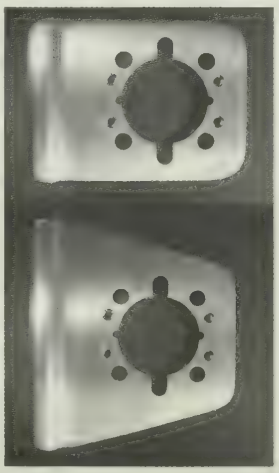


Supa Doors – The End of the Boring Door

With unlimited designs and profiles, Supa Doors has invented a unique, patented process to create stile and rail MDF doors where every piece is laminated to every piece simultaneously. This continuous lamination utilizes two individual stile and rail frames and sandwiches the panels between them under high pressure. This system ensures that there are no weak joints, and thus better resists warping, splitting, and bowing. Supa Doors are supplied to prestigious developments and homes throughout the world, and bring elegance to any job at very affordable prices. Supa Doors, 888-787-2366, www.supadoors.com. **CIRCLE 125**

The New 1082-4 & 1082-6 Cylindrical Lock Guard

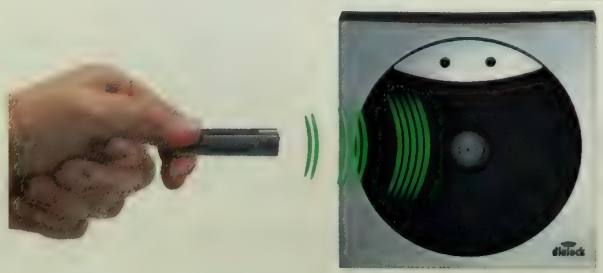
Specifically designed to protect the door latch from vandalism and forced entry. This ingenious product installs in minutes to protect all American-made cylindrical locks. It is a perfect specification item for retrofit and new construction as no additional door prep is required. A recent application at a high school in Hawaii thwarted criminal entry–Despite hours of criminal attempt, the door could not be breached! This device is so versatile that it can be adapted for use with all popular manufacturers' models push-button electronic locks. TRIMCO, 323-262-4191, www.trimcobbw.com. **CIRCLE 126**



Stainless Steel & Max-Steel Latchsets and Locksets

The smooth, clean lines of the contemporary stainless steel levers add a sleek yet sophisticated refinement to modern design themes. The complementing Max-Steel locksets allow for a more traditional accent, by utilizing a unique process coating over solid brass that retains the brushed steel look with more curvy, intricate detailing. Both lines showcase the timeless appeal of stainless steel and provide superior resistance to tarnishing, pitting, and corrosion caused by harsh coastal environments. As functional as they are striking in design, each selection is practical and requires minimal care. Since 1964, Omnia has been a leading manufacturer of solid brass latchsets, mortise entry locksets, deadbolt locksets and narrow backset mortise locks in over seventy knob and lever designs. Omnia also manufactures solid brass hinges, architectural trim hardware, and cabinet hardware, available through leading distributors coast to coast. Omnia Industries, Inc., 973-239-7272, www.OmniaIndustries.com. **CIRCLE 127**





Dialock Furniture Terminal

As an electronic locking method, the systems eliminate the need to recore locks with a locksmith. Keys can be added or deleted by a local administrator, increasing the flexibility and security level of the system. These locking systems can function as simply as a small assigned locking system or a planned access control solution for a staff group plan incorporating audit trails. This same system can also function as a hoteling solution i.e., an unassigned locking system. All products meet the standards for furniture locking systems as these products are tested for temperature, humidity, and cycle variations. All locking systems can be concealed allowing the aesthetics of the furniture or cabinetry to be the main focus. Hafele America Co., 336-434-2322, info_us@hafeleamericas.com. **CIRCLE 128**

For more information, circle item numbers on Reader Service Card or go to www.archrecord.com , under Resources, then Reader Service.

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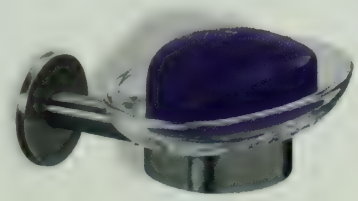
Our innovative designs for hardware, components and accessories will meet your needs to fit every room – for example:

For Kitchens



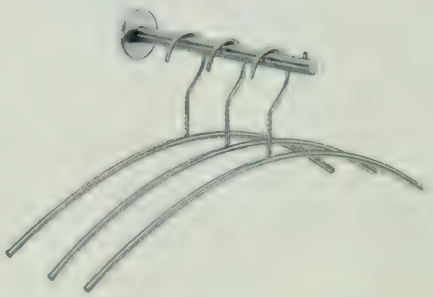
HK1 - A single hook with great style in Satin Stainless. We offer an incredible array of accessories for kitchens.

For Baths



SPH2 - Oval glass soap dish fits into round Satin Stainless holder. See our wide variety of bath designs.

For Closets



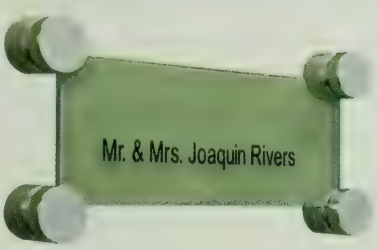
HNGH1K - Hanger holder and three Stainless Steel coat hangers. See many other holders, coat hangers and shelves.

For Doors



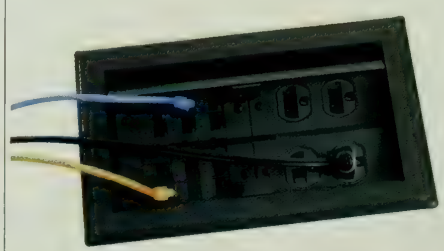
HDL47 - Door handle features bold metal supports and sleek oval polypropylene grips. Many other creative styles.

For Lobbies



MPB's - A wide variety of stand off sizes and shapes to tastefully hold signs. Limited by your creativity!

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MFMA PRESENTS

Northern hard maple flooring... the multipurpose surface

Maple flooring has been the ideal choice for sports and athletic facilities for over a century due to its strength, durability and beauty. It is also an excellent choice for multipurpose facilities that host more than sporting events. Maple's versatility and aesthetic qualities make it a wise choice for elementary schools, middle and high schools, college recreation facilities, YMCAs, family centers, churches, aerobic and dance rooms and military bases. Correctly specified, installed and maintained, maple floors can provide a dependable flooring surface for more than 60 years, despite varied uses.

This section will help architects understand, identify and take advantage of the multipurpose opportunities that northern hard maple flooring offers. Upon completion of this section, you will be able to identify details necessary to write a specification for a multipurpose floor.

Northern hard maple is an organic product consisting of patterns of fibers and air pockets that give it a natural shock-absorbing quality. These characteristics, combined with specially designed and engineered subfloor systems, deliver performance and safety ideally suited for a variety of sporting and non-sporting activities. Because multipurpose floors differ immensely from strictly sports floors, it is critical that architects identify the intended functions of the room and select the proper subfloor system. This is especially true for elementary and high school gyms.

"Gymnasiums are constantly being used for more than sports activities; they are used for community meetings, health fairs, bake sales and bazaars. A typical gymnasium will have a gym class throughout the day and then a community meeting in the evening. Northern hard maple flooring functions extremely well in that kind of multi-purpose environment," says Daniel Heney, technical director of the Northbrook, IL-based MFMA. "Regardless of the activity, the floors are expected to maintain their aesthetic appearance, deliver dependable traction and be easily cleaned for the next event."

ONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Northern hard maple flooring... the multipurpose surface.**

o earn one AIA/CES Learning Unit, including one hour f health safety welfare credit, answer the questions on age 255, then follow the reporting instructions on page 20 or go to the Continuing Education section on *rchrecord.construction.com* and follow the reporting nstructions.

EARNING OBJECTIVES

fter reading this article, you should be able to:

- *Describe the various characteristics that make maple flooring an ideal multipurpose surface.*
- *Describe what is important to consider when writing a specification for a multipurpose floor.*
- *Describe what things you should NEVER do to a multipurpose maple floor.*

Safety

Northern hard maple's hard-but-resilient character, natural shock absorption and area elasticity are enhanced by specially engineered subfloor systems. Subfloor systems can be customized to emphasize maple's natural elasticity and shock absorption (ideal for aerobics rooms or dance floors), stiffness (ideal for basketball or volleyball) or both. This versatility makes maple floors ideal for multiple uses including athletic performance, dances, roller skating, etc. Whatever the intended purpose or subfloor, northern hard maple provides dependably uniform grip and traction to athletic footwear that can maximize performance and safety while minimizing injuries.

According to candidates for the certification of the American Board of Orthopaedic Surgeons, the majority of anterior cruciate ligament (ACL) injuries are non-contact in nature and high school aged students are far more likely to undergo ACL reconstruction than college aged students. These injuries can be attributed to planting and cutting, straight-knee landing, and one-step stop landing with the knee hyperextended [3]. Pivoting and sudden deceleration are also common mechanisms of non-contact ACL injury[2,4]. Considering that basketball ranks second among the top eight recreational activities with the largest number of musculoskeletal injuries among children ages five to 14 years with the most common injury sites being the ankle, hand and knee[1] and that common causes of these injuries (running, jumping, quick stops, etc.) routinely occur on all gymnasium and non-gymnasium floors in athletic and non-athletic settings, it is vital that the flooring possesses the greatest number of safety characteristics while offering maximum versatility. Northern hard maple offers a proven track record performance and safety when used in competitive and multipurpose settings.

The Birmingham, Mich.-based Ducker Research Co. Inc., conducted a survey in 1998 (funded by the MFMA) of sports flooring owners who had maple and synthetic floors or who had replaced synthetic flooring with maple. This survey compared incidence of injuries that occurred on each sporting surface. The resulting data indicated that athletes were 70 percent more likely to sustain a floor-related injury on a synthetic floor than on a maple floor.

Durability

MFMA maple's life cycle cost is surprisingly less than that of synthetics. The issue of life cycle costing is a critical evaluation criterion for facility owners and managers. The Maple Flooring Manufacturers Association estimates that the cost of a maple floor compared to the costs of PVC and poured urethane floors are, on average 12 percent lower than the cost of PVC floors and 33 percent lower than poured urethane floors. Life cycle cost comparisons reflect original installed price plus manufacturer-recommended maintenance over a 30-year floor life:

Northern hard maple$0.89 / sq. ft. / year

PVC.....$1.01 / sq. ft. / year

Poured urethane$1.42 / sq. ft. / year

(Typical life span for a 25/32" maple floor is 38 years, PVC and poured urethane products have typical life spans of 15-20 years.)

Strength

Maple floor systems vary in strength due to the thickness of the maple installed and the design of the subfloor system. Subfloor designs vary significantly among floor systems so MFMA strongly recommends consultation with an MFMA mill manufacturer prior to selecting a subfloor system in a multipurpose setting. The MFMA mill manufacturers can help you select a subfloor system that fits your needs or help you customize a subfloor system for unique requirements.



Ease of daily maintenance

Caring for a maple floor in a multipurpose setting requires only minor additional maintenance. Daily sweeping, dust mopping with a treated dust mop and cleaning up spills are all that is required to maintain the beauty of a multipurpose maple floor.

THINGS TO INVESTIGATE BEFORE WRITING THE SPECIFICATION:

Subfloor blocking

Subfloor blocking is typically needed in areas where the maple floor will be subject to heavy loads (bleachers, portable backstops, gym floor cover carts etc.). MFMA refers all inquiries concerning subfloor blocking requirements to the individual flooring system manufacturer and the specified equipment manufacturer. Variances in bleacher system design, portable backstops, loading, total weight and operation make uniform specifications for subfloor blocking impossible.

Things to Look for When Specifying Maple Floors in a Multipurpose Room

1. Specify a reputable hardwood sports flooring contractor with significant experience in projects of similar size and scope to yours.
2. Determine who will be using this floor.
3. Determine what activities will be performed on the surface.
4. Specify a subfloor system that matches the floor's designated primary activity.
5. Specify any changes to the specified subfloor system and the locations of those changes.
6. Specify pre-installation conditions of the room, including fully functioning HVAC, constant temperature and humidity, weather tightness.
7. Specify industry-recognized installation guidelines throughout process.
8. Specify following the same post installation maintenance procedures.







Proper coatings for mutlipurpose surfaces

The Maple Flooring Manufacturers Association has published specifications for gymnasium sealers and finishes for maple floors and lists products that conform to such specifications for the sole purpose of providing guidance to achieving the highest protection and most enduring beauty in wood floors. All of the finishes listed on the MFMA Athletic Flooring Sealer and Finish Specifications and Conformance List are tested for conditions normally associated with a multipurpose floor. Such tests include: Gloss, Color, Hardness, Abrasion Resistance, Stain Resistance and Alcohol, Beer and Coca-Cola® Resistance. When selecting a floor finish for a multipurpose floor, make sure that the product is MFMA Certified.

Surface protection

Floor covers are not always needed in multipurpose rooms but they offer an extra layer of protection and helps to keep your multipurpose maple floor looking its best. Several manufacturers produce gymnasium floor covers for that extra protection and they come in a range of styles and thicknesses. The differences among covers include thickness of the vinyl wear coating and the strength of the fabric core. When evaluating a cover for durability, remember that the more durable covers have thicker coatings. Covers with higher strength core fabric will resist more abuse and tearing.

Specifiying a maple sports flooring surface

There are three types of wood flooring that are considered MFMA products: Northern hard maple (Acer saccharum), American beech (Fagus grandifolia) and yellow birch (Betula alleghaniensis). These species of MFMA Products produced by MFMA manufacturers are available in three basic configurations: random-length strip, finger-jointed strip, and parquet. Each of these surface materials can be installed in a single direction, and parquet can be laid in patterns such as a checkerboard, chevron, etc. Here are basic descriptions of each type of flooring:

Random-Length Strip — Consists of individual pieces of flooring, typically $1\frac{1}{2}$ inches or $2\frac{1}{4}$ inches wide, with lengths between 9 inches and 8 feet. The most common thickness specified is $\frac{25}{32}$ inches, but $\frac{33}{32}$ inches thick random-length strip flooring is also available. This surface material is installed like a horizontal brick wall, with each piece being overlapped with adjacent pieces and fastened into the subfloor with cleats, staples or steel clips, depending on the subfloor chosen for the project.

Finger-Jointed Strip — A number of random-length strip segments joined together at the manufacturing plant to form a consistent length board typically $1\frac{1}{2}$ inches or $2\frac{1}{4}$ inches wide. The most common thickness specified is $\frac{25}{32}$ inches, but $\frac{33}{32}$ inches thick finger-jointed strip flooring is also available. This surface material is also installed like a horizontal brick wall, with each consistent-length board being overlapped with adjacent boards and fastened into the subfloor with cleats, staples or steel clips, depending on the subfloor chosen for the project.

Parquet — Hard maple parquet flooring is manufactured in square and rectangular panels in a variety of dimensions. Individual picket widths range from $\frac{7}{8}$ inch to $1\frac{1}{8}$ inches, and picket lengths range from $5\frac{1}{2}$ inches to 12 inches. Minimum thickness of MFMA parquet flooring is $\frac{5}{16}$ inch. Individual pickets are assembled into panels and either joined together by wire, mesh, or tape on the back of the panel, or paperface on the front (or surface) of the panel. Parquet flooring is typically installed directly to the concrete substrate using adhesive/mastic, or over subfloor systems that contain continuous subfloors (plywood or similar).

The use of 33/32 flooring

With recent advances in flooring system technology, many specification choices have been simplified. "Over-engineering" of wood flooring systems is quickly becoming a thing of the past. Years ago, architects and specifiers required this product to be used on many installations to ensure structural stability and to add years to the floor's life span. Over the past twenty years, MFMA manufacturers have invested heavily in the research of structural stability and performance issues for maple flooring applications. As a result, most of the integrated flooring systems produced today do not rely in large part on the surface maple for structural stability and system performance. Subfloor design is the key. MFMA statistics showed that less than one percent of replacement floors were necessitated by depleted wear surface on the existing floor. Simply stated, the specification and use of $\frac{33}{32}$-inch thick maple flooring is in many cases a waste of a natural resource.

FACILITY MAINTENANCE:

Equipment maintenance

Check and clean wheels — Nylon, plastic and metal wheels on storage carts, bleacher wheels and portable backstops can cause scuffmarks and scratches. Cleaning wheels, removing rocks and other hard debris, and making sure that the wheels roll easily will minimize potential damage.

Northern hard maple flooring... the multipurpose surface.



Maintaining furniture

The type of furniture used in a facility should be carefully selected. Folding chairs and tables that are set up and taken down frequently can be a nightmare for any type of flooring in multipurpose spaces. Maintenance personnel should ensure that rubber caps are maintained and in place on all legs before use or the maple flooring can be scratched.

Daily maintenance

Follow MFMA recommendations in the *Caring For Your MFMA Maple Floor* pamphlet. Always keep your floor free of dust, dirt, abrasive particles, and debris. **NEVER USE WATER TO CLEAN YOUR FLOOR** and never use dust mops treated with silicone, wax, or acrylic-based products. Your floor finish manufacturer has dust mop treatments specifically designed for compatibility with the finish used on your maple floor.
Clean up spills when they happen.

SIX STEPS FOR PROPER DAILY MAINTENANCE:

1. Sweep the floor daily with a properly treated dust mop. If the floor is used heavily, sweep it up to three times per day.
2. Wipe up spills and any moisture on the floor.
3. Remove heel marks using an approved floor cleaner applied with a soft cloth or dusting mop. Contact your floor finish manufacturer for approved cleaning products.
4. Make sure the heating/ventilating/air conditioning system is functioning properly and set to maintain indoor relative humidities between 35% and 50% year round. In areas of consistently high or low outside humidity, a 15% fluctuation will not adversely affect the maple.
5. Inspect floor for tightening or shrinkage. Check for water leakage around doors and windows during wet weather. Remove debris from expansion voids.
6. Always protect the floor when moving heavy portable equipment or lifts. Ensure portable equipment does NOT have crowned wheels or wheels that include center ridges remaining from the molding process. These types of wheels can create very significant point loads.

Annual maintenance

To preserve the beauty and life of your maple floor, the MFMA recommends that multipurpose surfaces receive periodic refinishings. MFMA typically recommends that facilities having heavy use receive a new coat of floor finish every year to maintain its beauty and to protect the floor. Facility use, abuse, and maintenance will ultimately determine the appropriate recoating schedule. A typical recoating requires abrading floor's surface and applying another coat of floor finish.

From time to time, even the most meticulously cared-for maple multipurpose floor should receive a complete resurfacing. Resurfacing restores the luster in an older maple surface, and assures long life and excellent performance. The frequency of complete resurfacing depends on numerous factors, but typically is performed about every eight to ten years. Typically, the installation sanding will remove a full 1/32 inch of maple thickness above the tongue. When a floor is completely resurfaced the sanding typically does not remove any more than 1/32 inch of thickness. The maple floor should be sanded with a minimum of three cuts using coarse, medium, and fine sandpapers. The first cut using coarse sandpaper removes the majority of the material in order to remove the scratches, dirt and stains that have accumulated since installation. The final two cuts do not remove as much material and should provide a smooth and even surface, free from scratches, drum stop marks or gouges.

Proper and preventative maintenance prevents problems

Daily maintenance of a multipurpose hardwood floor does more than keep up the appearance of the floor; it ensures that moisture-related problems are avoided whenever possible. Making certain that heat, air conditioning and humidity are set properly and that windows and doors are sealed against weather can reduce the impact of moisture on your floor. The use of appropriate equipment and cleaning agents also are essential to proper maintenance. The Maple Flooring Manufacturers Association has produced a bilingual (English and Spanish) video with instructions for proper maintenance.

NEVER Do the Following to your MFMA maple Floor

1. ***NEVER*** shut down the ventilating system in your facility for a prolonged period of time.
2. ***NEVER*** use household cleaning products or procedures. They can be harmful to the floor finish and to the wood. They may also leave floors sticky or slippery, and potentially harmful to people who walk on the floor. Your MFMA floor finish manufacturer will recommend the right cleaning and maintenance materials for your MFMA floor.
3. ***NEVER*** clean your MFMA floor using scrubbing machinery or power scrubbers that use water under any pressure. Water is your floor's worst enemy!
4. ***NEVER*** attempt to modify or repair your MFMA multipurpose floor without first consulting your MFMA contractor.

Sources

1 U.S. Consumer Product Safety Commission
2 Daniel DM, Stone ML, Dobson BE, et al: Fate of the ACL-injured patient: a prospective outcome study. Am J Sports Med 1994; 22(5):632-644
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4 Noyes FR, Mooar PA, Matthews DS, et al: The symptomatic anterior cruciate-deficient knee. J Bone Joint Surg (Am) 1983;65(2):154-174

CLICK FOR ADDITIONAL REQUIRED READING

The article continues at: http://www.maplefloor.org/literature/incofinjury.htm.

To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, contact Daniel Heney at MFMA, (847) 480-9138 or email mfma@maplefloor.org. The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Describe the various characteristics that make maple flooring an ideal multipurpose surface.*
- *Describe what is important to consider when writing a specification for a multipurpose floor.*
- *Describe what things you should NEVER do to a multipurpose maple floor.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 320. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. What characteristics of Northern grown maple make it desirable to use as a multipurpose flooring surface?
 - **a.** Maple flooring is a flooring surface that is as hard as concrete.
 - **b.** Maple is the ideal choice due to its strength, durability and beauty.
 - **c.** Maple flooring can be stained an array of colors.
 - **d.** Maple is often used in bridge building.
2. Which is the best thickness to use, 25/32 inch or 33/32 inch?
 - **a.** 25/32 inch is better because it is more rigid than 33/32 inch.
 - **b.** 33/32 inch is better because it is thicker and will last for a longer time.
 - **c.** 25/32 inch flooring is better than 33/32 inch because of the advancement in design of subfloor systems.
 - **d.** 33/32 inch is better because it is more resilient than 25/32 inch.
3. How often should a maple floor be sanded?
 - **a.** Yearly
 - **b.** After the basketball season
 - **c.** Every three years
 - **d.** Typically every eight to ten years
4. Name two of the four things you should NEVER do to your maple floor.
 - **a.** Never shut down the ventilating system for a prolonged period of time.
 - **b.** Never clean your MFMA floor using scrubbing machinery or power scrubbers.
 - **c.** Never use the same floor finish twice.
 - **d.** Never leave the lights on for extended periods of time.
5. What are the three basic configurations of maple flooring?
 - **a.** Elongated Parquet, Finger-Length Strip and Maple Block.
 - **b.** Random-Length Strip, Finger-Jointed Strip and Parquet.
 - **c.** Finger-Jointed Parquet, Random-Length Strip and Maple Veneer.
 - **d.** Random-Finger Strip, Jointed-Length Strip and Parquet.
6. The versatility of maple flooring makes it ideal for?
 - **a.** Shot put practice
 - **b.** Athletic performance, dances, roller skating, etc.
 - **c.** Archery
 - **d.** Paintball
7. Which of the following injuries is NOT commonly attributed to the floor surface?
 - **a.** Ankle-related sprains and torn ligaments.
 - **b.** Knee-related sprains and torn ligaments.
 - **c.** Spiral fractures of the medial condyle of the humerus.
 - **d.** Shin Splints.
8. What should you inspect a maple floor for on a daily basis?
 - **a.** Termites
 - **b.** Tightening or shrinkage
 - **c.** Bubbles
 - **d.** Carpenter bees
9. Where does the sport of basketball rank among the top eight recreational activities with the largest number of musculoskeletal injuries?
 - **a.** 8th
 - **b.** 5th
 - **c.** 1st
 - **d.** 2nd
10. Floor finishing products listed on the *MFMA Athletic Flooring and Sealer Specifications and Conformance List* are tested for resistance to what?
 - **a.** Yogurt, fruit juice and ketchup
 - **b.** Alcohol, beer and Pepsi®
 - **c.** Grain alcohol, beer and Sprite®
 - **d.** Alcohol, beer and Coca-Cola®

About MFMA

Established in 1897, the Maple Flooring Manufacturers Association is a trade organization representing the maple flooring industry. The MFMA is the authoritative source of technical and general information about maple flooring and related sports flooring systems. Its membership consists of manufacturers, installation contractors, distributors and allied product manufacturers who subscribe to established quality guidelines.

Through cooperative member programs, MFMA establishes product quality, performance and installation guidelines; educates end users about safety, performance and maintenance issues; and promotes the use of maple flooring products worldwide. Please call 847/480-9138, or write: MFMA, 60 Revere Drive, Suite 500, Northbrook, IL 60062. www.maplefloor.org. E-mail: mfma@maplefloor.org.

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Insulation earns high scores in green projects

e easy part of environmental stewardship

ading edge environmentally sensitive building projects today often incorporate ecial equipment to recycle water and heat, capture solar energy and manage the mate throughout the structure. But there is one familiar category that deserves rly attention in every green design project — building insulation.

Although insulation products have been around for many years and we tend to ce them for granted, they have many things going for them in today's green projects.

ONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Insulation earns high scores in green projects.** To earn one AIA/CES arning Unit, including one hour of health safety welre credit, answer the questions on page 261, then follow e reporting instructions on page 320 or go to the Conuing Education section on *archrecord.construction.com* id follow the reporting instructions.

EARNING OBJECTIVES

ter reading this article, you should be able to:

Explain how adding insulation is an easy way to meet green requirements and is a good investment for clients.
Understand how going beyond ASHRAE 90.1 can earn LEED points.
Determine how R-value indicates insulating properties
Recognize the value of third-party certification in verifying manufacturers' claims

Why insulation is good for green projects

Saves natural resources — The basic idea of thermal insulation, of course, is to resist the movement of heat and cold. In addition to making interior spaces more comfortable, insulation saves energy, a precious natural resource.

It takes energy to make insulation but the Alliance to Save Energy estimates that a typical pound of insulation saves 12 times the amount of energy needed to make it during the very first year of use.[1] That means the energy consumed during manufacturing is saved during the first several weeks of the product's use and the energy savings continues every month throughout the life of the structure in which it is installed. The more buildings use insulation – and the more insulation is used — the greater the savings.

Uses recycled materials — The category of insulation now includes products made from old newspapers and denim jeans, but even the most widely available and commonly used insulation products have substantial amounts of recycled content. Fiberglass insulation, for example, has up to 40 percent recycled glass content including both pre- and post-consumer waste.

Extruded polystyrene foam insulation — commonly used for roof and exterior insulation, sheathing, and foundation perimeter and cavity wall insulation — can have up to 20 percent recycled content. Manufacturers' claims for recycled content are backed up by Scientific Certification Systems, a leading, independent, third-party certifier of product attributes.

Meets emission standards — The indoor air quality concern for most green building projects is the potential release of Volatile Organic Compound (VOC) emissions. Acceptable threshold levels of VOCs have been established and many product manufacturers are submitting their materials to meet third-party certification guidelines.

Formaldehyde is one VOC getting attention through marketing claims and in the media. The compound is used to manufacture a wide variety of building materials and household products, and it is ubiquitous in the natural environment. Common sources of formaldehyde in the home include pressed wood products, carpeting, cigarette smoke and fuel-burning appliances, and it is used in personal clothing and household cleaners. Within standard fiberglass insulation,

[1] *Green & Competitive, Alliance To Save Energy*



the amount of formaldehyde is only a trace amount – less than 0.1 percent. At that low level, and because fiberglass insulation is oven cured during the manufacturing process, out-gassing of formaldehyde is so low that the Consumer Product Safety Commission (CPSC) and the EPA do not consider fiberglass insulation to be a significant source of formaldehyde in the home.

Reduces pollution — Two recent Harvard studies showed that upgrading insulation levels could result in fewer deaths and reduced instances of respiratory ailments and other diseases associated with air pollution.

The study showed that with every BTU of energy produced, harmful gases such as nitrous oxide (NOx) and sulfur oxide (SOx) are released into the air, causing pollution in our communities. A well-insulated home or commercial building reduces the amount of energy required to maintain a comfortable living or working environment. Reducing energy consumption means power plants burn less fossil fuel to produce the energy and the result is a reduction in polluting gases emitted into our communities. Each BTU saved through energy efficiency means cleaner air to breathe.

Saves money — A very important factor for most building owners is the opportunity to save money with insulation. Yes, adding insulation above minimum levels required by energy codes can add to the cost of building the structure, but the higher thermal performance will go on saving operating expenses throughout the life of the building. Ignoring the fact that energy costs are on the rise in recent years and focusing simply on saving pennies on the front end of a project can set the stage for wasting many dollars in higher utility bills down the road.

The U.S. Department of Energy (DOE) and some insulation manufacturers have developed software that can help you compare the thermal performance and cost effectiveness of various energy conservation options in both residential and commercial projects. You enter information about construction options and the programs calculate the energy savings along with measures of economic performance, i.e., life-cycle savings and simple payback.

Earns LEED credits — One of the most widely used benchmarks for assessing environmental performance of building projects is the LEED® rating tool developed by the U.S. Green Building Council (USGBC). LEED, an acronym for Leadership in Energy and Environmental Design, is a voluntary, consensus-based standard for developing high-performance, sustainable buildings. It was developed by USBGC members representing all segments of the industry.

Within LEED there are six categories where building projects can earn credits toward one of the four ranking levels of LEED certification. Four of those six categories can be impacted by insulation products. Perhaps the easiest way to earn LEED points is to go beyond the insulation requirements of ASHRAE 90.1, which is referenced by LEED as the baseline energy efficiency standard for commercial buildings.

Understanding LEED

A little more than 10 years ago the acronym LEED didn't exist. Now it seems to be on everyone's lips as consumers and building occupants demand high levels of environmental performance in new construction, and architects and building designers become aware of the LEED rating system as a meaningful way to satisfy the desire for environmentally friendly projects.

LEED traces its roots to 1993 when several building materials companies got together and formed a membership organization they named U.S. Green Building Council (USGBC). The sole purpose of that new organization was to promote environmentally responsible building designs.

One of the first things USGBC did to promote green and sustainable buildings was develop a comprehensive set of green programs and rating tools under the umbrella title Leadership in Energy and Environmental Design (LEED). There are several LEED rating tools focusing on different segments of the building market (residential, commercial, interior design and existing buildings), but LEED for New Construction and Major Renovations (LEED-NC) is the only tool presently offered by the USGBC and in widespread use. Other LEED rating tools are in draft or pilot form.

It is important to note before proceeding that LEED **does not** "certify" products and LEED does not require product "certification" information for product or material submittal verification. It is also important to understand that LEED does not single out one particular product type when assessing points within each environmental category. Instead, LEED rating tools consider the overall impact of all materials used. In short, LEED is a tool for rating the overall energy performance of a project, not a product.

LEED is a voluntary, consensus-based, market-driven building rating system that is based on accepted energy and environmental principles and strikes a balance between established practices and emerging concepts. It evaluates environmental performance from a whole-building perspective, providing a standard for what constitutes a "green building."

There are four ranking levels of LEED certification.

CERTIFICATION LEVELS	POINTS
LEED CERTIFIED	26-32
SILVER	33-38
GOLD	39-51
PLATINUM	52+

Within LEED there are six categories where various points can be attained for aspects of the building project:

- ***Sustainable Sites***
- ***Water Efficiency***
- ***Energy & Atmosphere***
- ***Materials & Resources***
- ***Indoor Environmental Quality***
- ***Innovation & Design Process***

Within each category are individual point credits and some categories and/or individual point credits have prerequisite requirements that must be met before points can be earned for the specific category or individual credit.

It is not necessary to accumulate points in every item under each category in order to amass sufficient total points to meet one of the ranking levels of LEED certification. Many of the individual point categories within LEED are structured such that a given point is based on the dollars expended in the project for each material and weight-averaged across the aggregate of all materials. So what is important is that when taken together the aggregate meets the individual point criteria within LEED. Within this structure the project team has the freedom to choose materials that have strong performance qualities **and** are low cost **and** available to meet different uses — not just products with high environmental attributes.

Following are the primary LEED credit criteria affecting insulation materials:

Energy & Atmosphere — *Optimize Energy Performance*: Points within this category range from 2 to 10 depending on the percent reduction in energy use. To earn LEED rating points, a project must exceed the minimum level of energy efficiency for the base building and systems. The starting point for the project is ASHRAE/IESNA Standard 90.1–1999 (without amendments) or the local energy code, whichever is more stringent.

The next step is to design the building envelope and systems to maximize energy performance. LEED suggests using a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. In your submittal for the project, you are asked to quantify energy performance compared to the projected energy cost budget for the baseline building. You must demonstrate the comparison using the Energy Cost Budget Method described in Section 11 of the Standard.

LEED project rating points are based on the percent of energy cost reduction.

NEW BUILDINGS	EXISTING BUILDINGS	POINTS
15%	5%	1
20%	10%	2
25%	15%	3
30%	20%	4
35%	25%	5
40%	30%	6
45%	35%	7
50%	40%	8
55%	45%	9
60%	50%	10

To earn LEED points you are required to complete the LEED Letter Template incorporating a quantitative summary table showing the energy saving strategies incorporated in the building design. You are also asked to demonstrate via a summary printout from energy simulation software that the design energy cost is less than the energy cost budget as defined in the ASHRAE/IESNA Standard.

Energy & Atmosphere — *Elimination of HCFCs & Halon*: The intent of this section is to reduce ozone depletion and support early compliance with the Montreal Protocol for phasing out the use of carbon-based refrigerants.

Projects can earn one point by installing base building level HVAC and refrigerant equipment, fire suppression and other systems that do not contain HCFCs or Halon.

This credit category is also being used to define the use of foam sheathing insulation, vinyl siding and other plastic-based products. The criterion does not prohibit the use of foam sheathing insulation, vinyl siding and other plastic-based products still using CFCs, HCFCs or Halon as there only needs to be documentation regarding how and when these carbon-based refrigerants will be phased out.

Materials & Resource — *Recycled Content*: Points in this category range from 1 to 2 depending on the amount of post-consumer or post-industrial recycled content of the product or products used.

The criteria for this category calls for a minimum of 25 percent of all materials used in the project to contain, in aggregate, a minimum weighted average of 20 percent post-consumer recycled content, or 40 percent post-industrial recycled content. The aggregate of all materials is based on calculating the total purchased dollars of each material.

Given this structure, it's not important that insulation per se be high in recycled content because insulation typically represents only about 1 percent of the dollars spent for all materials in the project.

To verify the recycled content of materials, LEED allows the use of the product database maintained by the California Integrated Waste Management Board (CIWMB) at *www.ciwmb.ca.gov/rcp*. The Website has a six-page list of 145 insulation products and reports the post-consumer content (PC) and total recycled-content (TC) for each product listed.

Materials & Resource — *Local/Regional Materials*: The intent of this category is to increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.

Points in this category range from 1 to 2 depending on the amount of materials that are extracted and manufactured regionally within a radius of 500 miles of the project.

The category calls for a minimum of 20 percent of all materials used in the project to be manufactured (final assembly before shipment to the jobsite) within a 500 mile radius of the project. You can gain an extra point if 50 percent of the regionally manufactured materials are extracted, harvested or recovered within a 500-mile radius of the project.

To meet this criterion substantiating documentation must be provided describing distance and the dollar amount of each material used.

The good news in this category is that insulation — a bulky but light material — is generally not shipped great distances from where it is made. The business tends to be very regional with manufacturing facilities scattered throughout North America. On the other hand, insulation typically represents only about 1 percent of the dollars expended for all materials on a project so it is difficult to achieve the needed percentage of recycled content with such a low-cost product.

Materials & Resource — *Rapidly Renewable Materials*: This category allows 1 point if at least 5 percent of all materials used in the project are considered rapidly renewable.

Rapidly renewable resources are materials that substantially replenish themselves faster than traditional extraction demand. Like the previous category, it is not particularly important that insulation per se be considered rapidly renewable because insulation typically represents only a small portion of the dollars expended for all materials in the project. Nevertheless, the Environmental Protection Agency (EPA) has classified glass fiber and other types of insulation as rapidly renewable and, therefore, insulation can help meet this point criterion.

Choosing the right insulation products

Not long ago, the task of selecting insulation was relatively easy. For the most part, the job involved choosing among pink, yellow and white. In a twist on Henry Ford's infamous quote, "You can have any color you want as long as it is [fiberglass]."

Now there are many other insulation colors and products out there — such as gray cellulose, blue cotton denim and a variety of foam insulations — but the companies that produce all of those colors and products make the same claim: they are really green. And regardless of color, most of the insulation products are widely available.

Growing concern about the environment, however, has prompted consumers and architects to ask for environmentally friendly products. Some insulation manufacturers have responded by developing new products. Others have modified existing products. All of them are actively promoting the environmental qualities of their products.



Insulation earns high scores in green projects.



So how does an architect decide which product to specify? Should you just pick a favorite color and hope it really is the "greenest" product available? That's one way, of course. Flipping a coin is another. But there are other ways of cutting through the verbal confusion and making a choice based on facts.

Third-Party Certification — One of the most basic things to check is whether an insulation product's environmental claims are backed up by an independent, third-party organization that has expertise and experience in evaluating such information.

An example of this is the GREENGUARD Environmental Institute℠ (GEI) certification and labeling program, which subjects building materials to rigorous tests for emissions of VOCs and other performance characteristics. GEI Certification for indoor air quality complies with criteria established by the U.S. Environmental Protection Agency (EPA), USGBC's LEED program and other notable organizations. Only low-emitting products that do not compromise the air quality of indoor environments are awarded GREENGUARD Certification™.

All manufacturers that have had their products certified by the GEI testing process put the GREENGUARD label in a prominent spot on their packaging. Information about certified products is also available at the GEI website: *www.greenguard.org*

Another third-party certification example is the Collaborative for High Performance Schools (CHPS, often pronounced "chips"), which aims to increase the energy efficiency of schools in California by marketing information, services and incentive programs directly to school districts and designers.

The Collaborative's goal is to facilitate the design of high performance schools: environments that are not only energy efficient, but also healthy, comfortable, well lit and contain the amenities needed for a quality education.

In May 2004, CHPS officially launched a low-emitting products database, which lists products that comply with California Special Environmental Requirements Specification (Section 1350). The Low-Emitting Materials Table is a free resource available on the Web to anyone.

The table can be found at: *http://www.chps.net/manual/lem_table.htm.*

Verifying Recycled Content — Claims for recycled content vary widely from about 25 percent up to 90 percent or more. That sounds good, but have the numbers been certified by an independent testing body?

One company specializing in such work is Scientific Certification Systems (SCS), established in 1984 as the nation's first third-party certifier for pesticide residue in fresh produce. Since then the company has become a certifier of multiple facets of the food industry, forest management, marine habitats and manufacturing-related businesses.

The company's environmental division certifies claims related to environmental achievement in product manufacturing such as recycled content and biodegradability. If you can't find SCS certification in the product's literature or on its packaging, you can check the list of certified products on the SCS website: *www.scscertified.com*

Recycle-ability – It should also be pointed out here that some insulation products themselves are recyclable. For example, extruded polystyrene foam insulation used in protected roof membrane assemblies can be picked up and used again when the time comes to replace the roof membrane underneath the insulation.

A recent example of this took place at DFW Airport in Texas. When the time came to replace membranes in insulated and ballasted roofing assemblies on the terminal buildings, the airport's roof manager looked for insulation under the rock ballast already on the roofs. What he found was perfectly usable extruded polystyrene insulation made more than 17 years ago.

After sending insulation samples to a laboratory to verify R-value and compressive strength, the consultant designed the re-roofing projects to reuse as much of the existing insulation as possible. The roofing contractor was able to pick up and reuse nearly 90 percent of the old material, saving the airport thousands of dollars that would have been spent taking the old material to a landfill and replacing it with all new insulation. Labor for getting the old insulation off the roof and new material up there would have added thousands of dollars to the project.

There are also environmental benefits to consider — less material to the landfill and less fossil fuel consumed in raw materials and manufacturing the new insulation. During the past 17+ years, the insulation has saved countless amounts of coal, oil, gas and electricity from being consumed, and it also helped avoid the creation of greenhouse gas emissions in making and consuming the energy to heat and cool the terminals. The insulation is now back in place to go on saving energy for another 17 or more years.

Safety Testing — Another important point to check is whether the insulation has been tested to substantiate its claims of safety and performance. This point seems rather basic but in fact some insulation products have yet to be tested.

As expected, the most widely used insulation material — fiberglass — has undergone the most safety testing. During the past 50 years more than 600 reports and scientific articles have been published on the health aspects of fiberglass. Based on the weight of evidence and reviews by several major health organizations, there is widespread support for the claim that fiber glass insulation is safe to manufacture and use.

The performance testing of insulation referenced in building and energy codes is generally done following standards set by the American Society for Testing and Materials (ASTM). A few of the common tests for insulation performance are ASTM C518 for thermal performance, ASTM E970 for radiant flux fire safety, and ASTM E136 for non-combustibility.

Newer vs. Better — There is often a knee-jerk reaction to assume that traditional products are not as good as something new. In such cases traditional products are assumed by default to be not as innovative as the newer products. But buyers and specifiers need to look deeper. Just because a product is new or is making certain marketing claims doesn't mean it's the best option.

An example of this is the Capitol Area East End Complex in Sacramento, Calif., where a $392-million five-building construction project built the state's largest and greenest office complex to date.

Hearing about a new fiberglass insulation that is made without adding formaldehyde, architects chose it for the first phase of the project. The one local supplier of that product was awarded the installation contract. Later, the design/build contractor learned that his choices weren't so limited because standard fiberglass insulation easily met the environmental and emission requirements of the project — in fact standard fiberglass insulation exceeded the requirements. This project set very low indoor emission requirements for products, including insulation. When testing was done for traditional fiberglass insulation, independent laboratory tests showed only trace amounts of formaldehyde being detectable — at half the state requirement. The general contractor had several bidders vying for the next job and opted to use standard fiberglass insulation for the much-larger second phase of the complex. ■

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The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Explain how adding insulation is an easy way to meet green requirements and is a good investment for clients.*
- *Understand how going beyond ASHRAE 90.1 can earn LEED points.*
- *Determine how R-value indicates insulating properties*
- *Recognize the value of third-party certification in verifying manufacturers' claims*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 320. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. Insulation is a good product for green projects because it:
 - **a.** Conserves natural resources
 - **b.** Is made with recycled content
 - **c.** Emissions of VOCs are typically well below green project limits
 - **d.** All of the above
2. The objective of LEED standards is to:
 - **a.** Certify the environmental performance of products
 - **b.** Require that manufacturers obtain certification for their products before they can be used in green projects
 - **c.** Provide a tool for rating the overall energy performance of a project
 - **d.** Determine which products in each category are best qualified for green projects
3. To earn LEED rating points for energy performance, a project must exceed the minimum level of efficiency for the base building and systems. The starting point for the project is:
 - **a.** ASHRAE/IESNA Standard 90.1-1999 (without amendments)
 - **b.** The local energy code
 - **c.** LEED for New Construction and Major Renovations (LEED-NC)
 - **d.** The more stringent of options "a" or "b"
4. To earn LEED points for optimizing energy performance, a project must:
 - **a.** Exceed the minimum level of energy efficiency for the base building and systems
 - **b.** Quantify energy performance compared to the projected energy cost budget for the baseline building
 - **c.** Demonstrate the comparison using the Energy Cost Budget Method described in Section 11 of the Standard
 - **d.** All of the above
5. To obtain a LEED point for using local or regional materials, a project must:
 - **a.** Incorporate a minimum of 20 percent of all materials used in the project to be manufactured within a 500 mile radius of the project
 - **b.** Incorporate a minimum of 10 percent of all materials used in the project to be manufactured within a 1,000 mile radius of the project
 - **c.** Certify that 50 percent of the regionally manufactured materials are extracted, harvested or recovered within a 500 mile radius of the project
 - **d.** a or c
6. What is the purpose of the GREENGUARD Environmental Institute certification and labeling program?
 - **a.** Identify products that meet established energy conservation requirements for green and sustainable projects
 - **b.** Certify low-emitting products that do not compromise the air quality of indoor environment
 - **c.** Rate the relative environmental performance of all products within a building materials category
 - **d.** All of the above
7. What does the R-value of a material indicate?
 - **a.** Thermal conductivity
 - **b.** Thermal conductance
 - **c.** Thermal transmittance
 - **d.** Thermal resistance
8. Which of the following products typically has the lowest emissions of formaldehyde?
 - **a.** Pressed wood products
 - **b.** Carpeting
 - **c.** Household cleaners
 - **d.** Fiberglass insulation
9. What is the highest level of LEED certification?
 - **a.** Platinum
 - **b.** Diamond
 - **c.** AAA
 - **d.** L1
10. To obtain LEED credits for the elimination of HCFCs & Halon, a project must use products that:
 - **a.** Comply with the Montreal Protocol for eliminating carbon-based refrigerants
 - **b.** Do not contain any HCFCs or Halon
 - **c.** Use products that have documentation regarding how and when HCFCs and Halon refrigerants will be phased out
 - **d.** Do not contain foam, vinyl and other plastic-based products

About Owens Corning

Owens Corning is a world leader in building materials systems and composites systems. Founded in 1938, the company had sales of $5 billion in 2003. Additional information is available on Owens Corning's Website at *www.owenscorning.com* or by calling the company's toll-free General Information line: 1-800-GET-PINK®.

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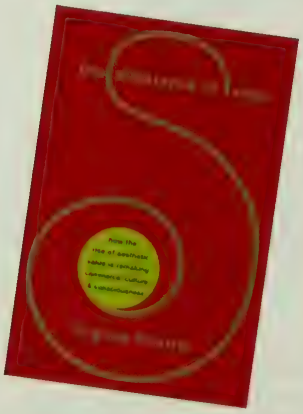
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Fay Jones
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Laminated glass with a Polyvinyl Butyral (PVB) interlayer:

Keeping unwanted noise at bay

ONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Laminated glass with a polyvinyl butyral (PVB) interlayer: eeping unwanted noise at bay.** To earn one AIA/CES earning Unit, including one hour of health safety wel- re credit, answer the questions on page 267, then follow ie reporting instructions on page 321 or go to the Con- nuing Education section on *archrecord.construction.com* nd follow the reporting instructions.

EARNING OBJECTIVES

fter reading this article, you should be able to:

Understand how laminated glass with a polyvinyl butyral (PVB) interlayer can control unwanted environmental noise while providing the visually attractive characteristics sought by the architect, specifier and owner.

Gain a better perspective on determining the necessary level of acoustical glazing.

Identify the advantages and multi-functional benefits of laminated glass with a PVB interlayer.

Sounds of the city

Rush hour traffic, airplanes overhead, construction equipment, blaring music — these are just some of the noises polluting U.S. cities. Unfortunately, noise is an unavoidable part of the daily environment, but it can be especially intrusive when it finds its way indoors. Transferred ground vibrations and sound transmitted through windows are the greatest contributors to noise in building spaces. Hence, improving the ability of windows to resist the passage of sound into building spaces is a high priority.

Exposure to excessive noise has been shown to cause hearing problems, stress, poor concentration, reductions in workplace productivity, communication difficulties, lack of sleep and a loss of psychological well being. At its most extreme, loud noise can even cause instant and permanent hearing loss.

According to the United States Environmental Protection Agency's Office of Noise Abatement and Control, "Noise constitutes a real and present danger to people's health and can produce serious physical and psychological stress."

Reducing unwanted noise is critical in commercial and residential settings. According to a 2001 study by Shomer and Associates of Champaign, Illinois, in the U.S. more than 40 percent of the population is exposed to transport levels exceeding 55 decibels (dB). And unlike most other environmental problems, noise pollution continues to grow.

Creating effective acoustic solutions

Because the perception of sounds can be as unique as the appearance of colors in a rainbow, it is important to understand the source of the particular noise to be attenuated prior to designing the acoustical solution. Sounds that are often the target of acoustical engineering include machinery, traffic (trucks and automobiles), trains (including urban rail systems) and aircraft. The differences in the



Noise pollution can originate in many ways, but increasing noise pollution is the result of growing populations; additional road, rail and air traffic; and greater industrial, neighborhood and recreational noise.

peak frequency of each of these sources of noise create unique requirements for their attenuation. Acoustical engineers have identified sound reduction targets for various sources of noise based on specific frequencies within a sound source. Different targets exist, for example, for diesel vs. non-diesel trains, heavy vs. medium trucks and even multiple noise sources. Glass laminated with polyvinyl butyral (PVB) interlayers is one of the most effective ways to reduce noise in all these situations because PVB reduces sound transmission through the glazing across a range of frequencies.

Sound transmission loss

Just as glass lets in light, windows can also transmit noise and they need to have damping added in order to provide sound control. A building material's resistance to the transmission of sound is known as the transmission loss (TL) and is expressed at a given frequency in decibel (dB or dBA) units. Transmission loss of a glazing material is typically measured between 80 and 5,000 hertz (Hz) in one-third frequency bands. The material's ability to minimize the passage of sound is quantified and reported as sound transmission loss (STL) at each defined frequency.

The STL of a material is measured by sending a known amount of frequency specific sound from one room (source room) through a wall-mounted specimen and recording how much of that sound gets through the other side (receiving room). The difference between the sound levels in the source room and the other room (the receiving room) is defined as the noise reduction (NR).

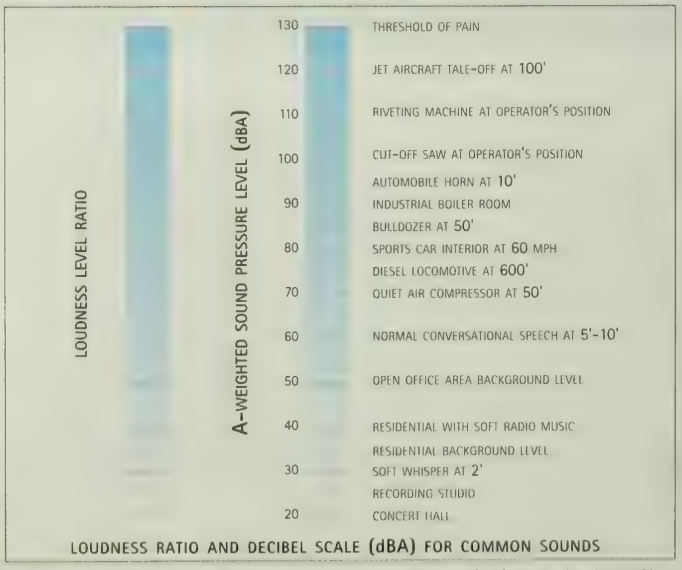
After obtaining the STL of the mounted panel the data is analyzed to determine the effectiveness of the material based on applications. For the most accurate reduction of noise, specific frequencies are reviewed to determine the level of sound reduction needed to dampen the offending noise. Because a thorough study of the surrounding noise can not always be obtained, it is common for the industry to use a single number rating system as a means of evaluating acoustical performance of materials.

For glazing, there are two methods of calculation used in the U.S. Sound transmission class (STC) uses the STL gathered in one-third octave bands from 125 – 4,000 Hz and a contour fitting principle to determine the single number rating. STC was designed to be used for sound transmission rating in interior compartments of buildings. Outside-Inside Transmission Class (OITC) is another single number rating that uses STL gathered from 80 – 4,000 Hz and a mathematical equation designed to depict human hearing to develop a single number rating. OITC was developed to assist in the determination of how much unwanted external noise will reach the inside of buildings. Although OITC is the better single number rating to use for outside noise penetration into a given facility, STC is more commonly referenced. It should be noted however that STC is weighted to "conversation" type noise and that certain frequencies of outside noise may not be damped to an acceptable level if sole reliance on STC is used during the acoustical design of a facility.

Sound transmission of a material is largely dependent on its mass, damping and stiffness, although in some cases size, temperature and edge anchoring can also alter the test data. Increasing glass thickness, and thereby increasing its mass, is one way to improve sound isolation performance. Augmenting glass stiffness or adding an insulating air layer between two plies of glass are other ways of improving sound insulation performance. The use of two lites of glass is generally effective only for an air space thickness larger than 0.5 inch (12.7 mm).

The remaining variable for improving sound transmission performance is glass damping. Damping is a mechanical property of a material or system, which quantifies the rate of dissipation of vibrancy energy into heat energy. For example, a bell has a low damping, and when a bell is struck, vibration persists or rings, resulting in sound that correspondingly persists. However, the ringing or vibration persistence can stop by holding the bell with one hand. This is a form of damping.

Generally glass has very low inherent damping and is usually only sufficient in reducing sound transmission loss within certain frequency ranges. By using laminated glass made with a polyvinyl butyral (PVB) interlayer, glass damping will increase and result in significant increase in STL. The damping increases attributed to glass through the use of a PVB interlayer could otherwise only be obtained through significant increases in glass thickness or increases in air spaces for insulating units. When laminated glass with a PVB interlayer is used in air spaced or insulting glass configurations, the benefits of damping are even greater.



LOUDNESS RATIO AND DECIBEL SCALE (dBA) FOR COMMON SOUNDS

The sensitivity of human hearing is restricted to the frequency range of 20 hertz (Hz) to 20,000 Hz. Human ears are most sensitive to sound in the 500 – 8,000 Hz range and become progressively less sensitive above and below this range. An increase or decrease in sound pressure level by 3 decibels (dB) or less is barely audible and an increase or decrease of 10 dB is perceived as doubling or halving of the noise level. It is the difference between a symphony concert (110 dB) and a rock concert (120 dB). Sound level meters measure acoustic signals by frequency and the sound pressure level at the designated frequency is weighted to correspond with the sensitivities of the human ear.

Laminated glass with a Polyvinyl Butyral (PVB) interlayer.

Acoustical glazing

Isolating interior building spaces from exterior sound is important if those spaces are to fulfill their intended purposes. An interior space that allows too much noise to be transmitted from outside may result in poor or inadequate conditions.

For example, a hotel located near a train station that has windows that do not sufficiently limit the amount of train noise in the guest rooms may fail to provide what hotel guests are looking for: a good night's sleep. Hotels are an obvious example; however most types of buildings (schools, office buildings, condominiums, etc.), and the people inside those buildings, can be adversely affected by high levels of environmental sound transmitted from outside.

When usual glazing configurations are not sufficient to limit the transmission of sound into building spaces, glazing configurations with enhanced sound transmission losses or acoustical glazing must be considered. There is no single definition for acoustical glazing, but most use a combination of a polyvinyl butyral (PVB) interlayer and an air space between multiple lites of glass.

Laminated glass made with a PVB interlayer is a highly effective way to reduce unwanted sound transmission even when used in a standard window design. It has been proven as a highly viable solution to the complex problem of retaining the integrity of a building's architectural design while simultaneously providing the most practical, effective form of sound control available in glazing systems.

Frame effects

Window frames serve an important role in the sound transmission loss of windows as they themselves can compromise the sound transmission loss. A sound transmission class (STC) rating, which is predominately used in the U.S., is a single number value quantifying the ability of a material to resist the transmission of sound. The higher the STC rating, the more able the material is to resist the transmission of sound. It is not uncommon to see window frames result in an STC rating that is 1 to 5 points less than the STC rating obtained for the glass alone. For example, a window outfitted with a glass configuration achieving an STC rating of 35, might as a total window assembly (frame and glass) only achieve an STC rating of 33 if frames or installation are deficient. Window manufacturers face the challenge of designing and building frames that maximize available sound transmission loss of glass configurations used.

There are no fixed guidelines for designed window frames that maximize sound transmission loss, but a few observations include:

- The lower the sound transmission loss of glass used in a window frame, the less likely that the window frames will compromise the window STC ratings.
- Windows with lightweight frames that use glass configurations with high sound transmission losses should be designed so the glass surface area is as large as possible, extending as far as possible between edges of building openings (i.e., extending as deeply as possible into window frames).
- Window frames that rely on glass position by means of blocking should make use of continuous blocks. Continuous blocks should also be used on sides and tops of windows.
- Window frames should have a surface weight as great as that of the glass. Often this is not the case, particularly in windows with acoustic glass.
- Packing large, hollow-tube sections of frames with loose, dense glass fiberfill has been noted to improve window sound transmission loss.
- Frames occasionally exhibit insufficient damping or ringing that manifests itself as a reduction in transmission loss (TL) of a particular frequency, generally less than 500 Hz. Although laminated glass with a polyvinyl butyral (PVB) interlayer can contribute to frame damping, direct application of damping compounds to window frame components can more efficiently increase frame damping.
- Always ensure adequate sealing of all glazing components and frame joints to eliminate sound leakage.

Many of these suggestions require testing to ascertain their benefit for a particular window frame. Others may require additional tooling or labor to implement properly.

Seeking to offset TL through enhancement of only glass would be inefficient and would likely be more expensive than implementing frame improvements. For example, the enhanced glass would still yield approximately the same STC if the air infiltration of the window is not rectified. A glazing that provides damping and a properly glazed frame system ensures the lowest levels of air infiltration, which is an acoustical window design fundamental.

Glazing selection

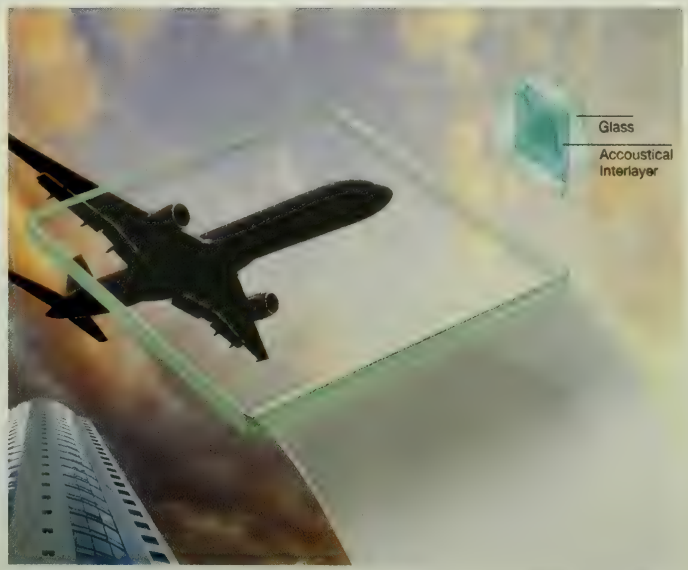
Whether single or double-glazing, the presence of one or two laminated components in a glass window or door can improve the acoustic performance of the glazing material by damping its resonance effects. In comparison, solid or monolithic glazing systems cannot as effectively control sound because of their reduced ability to screen certain frequencies of noises.

Monolithic glass (single thickness glass) has very low inherent damping because its transmission loss (TL) is affected by the mass of the glass and the bending frequency at various thicknesses. In order to get meaningful TL increases with monolithic glass, significant mass (thickness) must be added.

Typically the highest acoustical rating that can be achieved with a practically available monolithic lite is around 36 STC (12.7 mm [0.5 inch] glass). Double-glazed systems may offer an improvement over the monolithic systems, but the span of air space required to provide acceptable acoustical control introduces architectural design restraints as well as higher costs.

The installation of windows that provide an acceptable noise reduction involves first the assessment of the environmental noise and then the determination of the minimum acceptable window sound transmission class (STC) rating of weighted sound reduction index or Rw (the glass rating that is used in international and European standards).

Once a minimum sound reduction requirement has been determined, the next step is to use the information to arrive at an acceptable window glass configuration. This involves selecting or designing a glazing that has STC or Outside-Inside Transmission Class (OITC) values equal to or higher than the minimum required window performance level. The glazing selection would then be reviewed for other performance attributes such as safety, security, solar control, life cycle and aesthetics.



Laminated glass consists of a tough protective interlayer made of polyvinyl butyral (PVB) bonded together between two panes of glass under heat and pressure. Once sealed together, the glass "sandwich" acts as a single unit and looks like ordinary glass. Laminated glass made with a PVB interlayer is highly effective in reducing unwanted sound transmission and can be effectively used in standard window design.

Laminated glass with a Polyvinyl Butyral (PVB) interlayer.

Laminated glass with a polyvinyl butyral (PVB) interlayer provides a single unit system combining the density of glass with the sound absorbing characteristics of the PVB interlayer resulting in a single unit system that can provide the architect and specifier with a superior system for controlling unwanted sound.

For example, a 1/4-inch laminate (two lites of 1/8-inch glass bonded with 0.0300" PVB interlayer, nominal 1/4-inch overall thickness) has TL nearly equal the sound isolation provided by two pieces of glass 1/2-inch thick separated by 1/2-inch air space (1-inch overall thickness).

In addition to standard PVB formulations, an improved acoustical performing PVB layer is available for use in applications which require sound control properties beyond those attained with standard PVB. This PVB interlayer is particularly effective where installation dimension constraints do not allow for an increased glazing thickness that would otherwise be produced to achieve the necessary level of acoustical performance.

PVB interlayer damping is a very effective means for increasing sound isolation performance with a negligible increase in surface weight and total glass thickness. As with monolithic glass, the sound isolation performance of insulating glass can be increased significantly through the use of laminated glass.

Acoustical retrofitting

Often, acoustically deficient windows of an existing building are replaced with those that provide the necessary sound isolation performance. Other times, it is desirable to maintain the existing windows and improve their sound isolation performance by installing an acoustical sash.

In cases where additional window sound isolation is required and window replacement is not feasible, an acoustical sash can be a practical, cost-effective solution. An acoustical sash requires laminated glass. It must be well sealed and must be generously spaced away from the prime window glass. These installation requirements are usually more easily satisfied inside the prime window. For example, when the frame is glazed with 1/4-inch (6mm) laminated glass with a polyvinyl butyral (PVB) interlayer, increases in the sound transmission class (STC) rating up to 15 points can be obtained. This is a remarkable increase resulting in up to a quartering in perceived loudness.

Conclusion

There are many demands put on those responsible for architectural design and structural performance of buildings. Protecting tenants and users from the increasing noise levels of today's environment is a critical factor in the specification of glazing materials for new and/or renovated buildings. This is especially true today at a time when modern design trends emphasize generous use of glazing, and building owners require the highest level of comfort.

Laminated glass made with a polyvinyl butyral (PVB) interlayer can reduce perceived noise by as much as 50 percent over monolithic glazing systems, and laminated glass with a PVB interlayer can be used in any project where structural performance and a high level of sound reduction are required. Airports and surrounding structures, hotels, sports stadiums, recording studios, train stations, educational facilities and high rises are just some of the projects where use of laminated glass with a PVB interlayer can be specified. ■

All quiet at Carlson Restaurants Worldwide

Project: Carlson Restaurants Worldwide Corporate Office, Carrollton, Texas
Glazing Contractor: Country Glass & Mirror, Mesquite, Texas
Fabricator: Arch Aluminum & Glass Co., Waukesha, Wisconsin and Dallas, Texas
Interlayer Manufacturer: Solutia Inc., St. Louis, Missouri
Architect: Omniplan Architects, Dallas, Texas

Carlson Restaurants Worldwide Inc., a global restaurant company specializing in casual and sophisticated dining segments, operates franchises in 746 restaurants in over 50 countries. Company restaurants include familiar names such as: T.G.I. Friday's, Friday's Front Row Sports Grill, Friday's American Bar, Timpano Italian Chophouse, Samba Room and Pick Up Stix.

Carlson's new 130,000-square-foot corporate office building, located just steps away from active railroad tracks, sees train traffic throughout the day. To reduce the intrusive blare of the trains passing by, the building's owners wanted to install high sound control glass in several offices including that of the CEO, the boardroom and other offices located near the train tracks. "The din of the trains is extremely disruptive and could have had a negative impact on workplace productivity," notes Jack Wickstrom, Dallas sales manager for Arch Aluminum & Glass Co.

To achieve an STC rating of 45 in the CEO's office and boardroom and an STC rating of 42 for the other offices closest to the train tracks, the architects chose laminated glass with a PVB interlayer. "The sound isolation resulting from the acoustical glazing was remarkable," says Wickstrom. "The occupants of the building can now go about their workday without being disturbed by the racket of the trains clamoring by."

The following glass configurations were used to achieve the optimal noise reduction for the Carlson Restaurants building:

Glazing One: 1 3/16" overall insulated thickness to achieve an STC of 45:

Outboard Lite:	1/4" Optigrey Tempered Glass
	0.060" Clear Arch Sound Zone Plus PVB
	1/8" Clear Annealed Glass
Airspace:	1/2"
Inboard Lite:	1/8" Clear Annealed Glass
	0.030" Clear Arch Sound Zone Plus PVB
	1/8" Clear Annealed Glass

Glazing Two: 1 1/8" overall insulated thickness to achieve an STC of 42:

Outboard Lite:	1/4" Optigrey Tempered Glass
Airspace:	1/2"
Inboard Lite:	1/8" Clear Annealed Glass
	0.060" Clear Arch Sound Zone Plus PVB
	1/8" Clear Annealed Glass



The 130,000-square-foot Carlson Restaurants Worldwide office building is located just steps away from active train tracks The noise of the trains is virtually unheard by Carlson employees due to laminated glass windows with a PVB interlayer.



A train passes to the left of the tall grass which separates the train tracks from the corporate offices of Carlson Restaurants Worldwide.

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at: archrecord.construction.com/resources/conteduc/archives/0411solutia-1.asp

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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Understand how laminated glass with a polyvinyl butyral (PVB) interlayer can control unwanted environmental noise while providing the visually attractive characteristics sought by the architect, specifier and owner.*
- *Gain a better perspective on determining the necessary level of acoustical glazing.*
- *Identify the advantages and multi-functional benefits of laminated glass with a PVB interlayer.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 321. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. Which of these problems can be caused by excessive noise (may be more than one correct answer)?
 - **a.** Hearing problems
 - **b.** Sleep loss
 - **c.** Reduced productivity
 - **d.** Increased stress levels
2. Which of the following are reasons for increased noise (may be more than one correct answer)?
 - **a.** Growing populations
 - **b.** Louder car horns
 - **c.** More road, rail and air traffic
 - **d.** More rock & roll radio stations
3. The human ear is most sensitive to sounds within which frequency range?
 - **a.** 110 to 120 dB
 - **b.** 500 to 8,000 Hz
 - **c.** 20 to 20,000 Hz
 - **d.** 3 to 10 db
4. Which of the following is not a factor in a material's sound transmission?
 - **a.** Mass
 - **b.** Opacity
 - **c.** Stiffness
 - **d.** Damping
5. The higher a material's sound transmission class (STC) rating, the better that material is at reducing sound transmission.
 - **a.** True
 - **b.** False
6. Laminated glass with a PVB interlayer has sound transmission loss (TL) nearly equal to monolithic glass roughly double its surface weight.
 - **a.** True
 - **b.** False
7. In addition to its sound control properties, laminated glass with a PVB interlayer offers benefits that include all of the following except:
 - **a.** Increased visibility of objects located in the distance
 - **b.** Prevention of flying glass in the event of an impact
 - **c.** Protection in hurricanes, earthquakes and even bomb blasts
 - **d.** Protection from harmful UV rays
8. Polyvinyl butyral (PVB) was first produced commercially in what year?
 - **a.** 1903
 - **b.** 1910
 - **c.** 1938
 - **d.** 1952
9. Which of the following are true in regard to the use of laminated glass in automobiles (may be more than one correct answer):
 - **a.** Laminated glass with a PVB interlayer is commonly used in today's windshields
 - **b.** Laminated glass is being used more and more in side, rear and roof windows of automobiles
 - **c.** Laminated glass was first used in cars to reduce wind resistance
 - **d.** Laminated glass can significantly reduce wind and traffic noise compared with standard tempered glass
10. The first step in selecting a window glass configuration for a project is to determine the necessary minimum sound reduction.
 - **a.** True
 - **b.** False

About Solutia Inc. and Arch Aluminum & Glass Co.

Solutia Inc. is a world leader in performance films, producing Saflex® and Vanceva™ brand polyvinyl butyral interlayers (PVB) for laminated glass in automotive, architectural and residential applications. Solutia is also a leader in process development and scale-up services for pharmaceutical fine chemicals; specialties such as water treatment chemicals, heat transfer fluids and aviation hydraulic fluid and an integrated family of nylon products including high-performance polymers and fibers.

Arch Aluminum & Glass Co., Inc., founded in 1978, is an American-owned, family business. It is a leader in the glass, mirror, laminated and architectural aluminum industries and operates 23 facilities in 16 states with over 1,600 employees.

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Wood flush doors have established themselves as the pinnacle of quality door manufacturing. Source: Eggers Industries, Neenah, Wis.

THE WINDOW & DOOR MANUFACTURERS ASSOCIATION PRESENTS

Performance override: Door specifications meet the "real world"

Architectural wood flush doors are part of a superior interior built environment and now there's an improved standard to guide their specification.

A major overhaul to an industry interior architectural door standard—I.S. 1A-2004 *Industry Specification for Architectural Wood Flush Doors*—is ready, and its focus is on performance-driven specifications. Application-driven construction performance standards are the wave of the future, and they're here now for many different building products. For the door, window and skylight industry, performance standards focus on the built environment in which the product will be used and the move to performance standards versus prescriptive design specifications is an ongoing strategy. It's a win-win for the architect and everyone else in the market that purchases and uses architectural wood flush doors, but especially, the end-user, who can rely on the product to serve the facility well over the long haul.

Exterior products have always been under close scrutiny by the architect, specifier, designer and end-user just because of their sheer nature. They're visible and they play an important role in the overall efficiency and longevity of the building. Now, early in the construction pre-planning stages of a project, building products like interior architectural wood flush doors have also taken their rightful place as products that make a difference in the scope of the entire building project envelope.

In order for the architect to plan, design and specify commercial interior doors correctly, they need the proper tools. They need to know which door is right for the type of environment in which it will operate. It's a simple fact of life that a door that is in a facility that experiences heavy use on a daily basis must be able to perform at a higher level than a door which has little or infrequent use. Within a facility, the use factor of interior doors will vary, depending on the location itself. That's the real world and that's how doors must be manufactured and specified as well and that's what I.S. 1A does.

Application-driven specifications

It makes sense that interior architectural products, too, have been recognized in the push for performance and have stepped up to meet the rigors of both normal and extraordinary usage. This re-released standard for architectural doors emulates the importance of the built environment in which interior wood flush doors are used.

Published by the Window & Door Manufacturers Association (WDMA), Des Plaines, Ill., I.S. 1A-2004 *Industry Specification for Architectural Wood Flush Doors* is a major overhaul and rewrite of an existing industry interior

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Use the learning objectives below to focus your study as you read **Performance override: Door specifications meet the "real world."**

o earn one AIA/CES Learning Unit, including one hour f health safety welfare credit, answer the questions on age 273, then follow the reporting instructions on page 21 or go to the Continuing Education section on *rchrecord.construction.com* and follow the reporting istructions.

EARNING OBJECTIVES

fter reading this article, you should be able to:

- *Understand the difference between performance vs. prescriptive design standards.*
- *Identify interior wood architectural door types based on where they are to perform within the facility.*
- *Become familiar with the new distinct performance levels or grades for these doors which are crucial in their overall specification.*

architectural door standard. This standard had in the past always been prescriptive in nature, but the latest revision transforms the document into a truly high-level performance-based document based on scientific criteria and testing.

For the first time, there are distinct performance levels or duties for these doors and anyone who specifies architectural doors must become familiar with the new categories in order to do justice to the product and to the facility. I.S. 1A provides a much-needed guideline for architects and specifiers who determine the nature of wood flush doors in commercial settings. More importantly, it's a reference guide they will use again and again in the scope of their designs.

For WDMA, the mission is to provide the necessary knowledge to install a superior fenestration product — and much of that drive comes from its standards and certification programs. WDMA as an organization has determined that key to the success of any standard is an emphasis on performance, and the recent release of I.S. 1A in early fall 2004 is a perfect example. With this standard, door construction may vary, as long as the specified duty (performance) level is met or exceeded, says David San Paolo, operations manager for The Maiman Co., Springfield, Mo., and a member of WDMA's I.S. 1A Task Group, the industry association committee which has worked intensively on revamping and targeting the standard.

At the core of the standard are the newly created Performance Duty Levels and Values, he says. "These requirements are based on engineering studies and not arbitrary numbers. The representative Performance Duty Levels and Values were reached using mathematical models and historical data collected in the course of the 35- to 40-year history of the industry," he says. And although they are minimum requirements, in many cases manufacturers may certainly exceed those initial parameters, San Paolo adds.

Performance vs. Prescriptive

The significance to the architect has to do with the performance emphasis, rather than a prescriptive design specification and here's the major difference. In the past, standards told manufacturers what materials and dimensions to use. I.S. 1A is flexible and recognizes innovation in materials and technology and gives manufacturers the ability to use different materials as long as they meet the performance criteria for compliance outlined by the standard.

Overall, the standard allows the architect and designer to specify the door for the end-goal or use for the owner of the facility, says Steve Hubert, inside sales manager for The Maiman Co. Hubert works with architects in the field to aid in their door specifications and also holds a degree in architecture. Hubert adds that there's a move in the design-build community to follow these types of standards, as they can streamline a job submittal by providing exact performance attributes rather than construction-material-mandates alone.

"This is an extremely significant document to the design specification community," says Brian Buckles, vice president of Manufacturing Operations, Algoma Hardwoods, Algoma, Wis., and vice chair of the I.S. 1A Task Force. "The architectural wood flush door is an important part of the building envelope. The standard allows the architect to tailor the type of door to the type of building. It will significantly improve the level of product specification available to the architect for the building," he says. "Now, with the WDMA standard, both aesthetic and performance aspects of the door can be specified. This change will allow the architect to relate a door's construction to anticipated frequency and severity of use in the building, helping to provide a better value and longer life cycle of flush wood doors to the owner as well," he adds.

Highlights of I.S. 1A

- Performance-based, rather than prescriptive
- Specific performance duty levels and values spelled out
- Revised species for veneer grading tables
- Positive-pressure fire door wording added
- Completely revised and expanded finishing section
- Installation specification checklist
- Aesthetics focus on appearance of faces and edges and performance, on functionality

In retrospect, I.S. 1A epitomizes WDMA's move to total performance-based standards wherever and whenever possible. "When products are manufactured to specific guidelines for their use in the field, everyone benefits from the outcome — including the buyer, specifier, architect, designer and consumer," comments Alan J. Campbell, CAE and president, WDMA. "The design professional can specify with confidence using I.S. 1A guidelines. Other new standards, such as the latest version of the North American Fenestration Standard, take this tack as well. In the end, the result will be a complete compendium of standards that may provide, ultimately, the perfect product for the job, because they are based on true-to-life application scenarios," Campbell says. WDMA wants to make the document an important reference point for the architect in his day-to-day specification duties.

I.S. 1A is the culmination of intensive work by WDMA's I.S. 1A Task Force, an Industry User Group and many other individuals and organizations. For example, the task force worked with the Architectural Woodwork Institute (AWI), Reston, Va., to include input from that organization. In addition, the Hardwood Plywood and Veneer Association (HPVA), Reston, Va., created new face veneer charts that apply specifically to architectural and commercial wood flush doors. WDMA adopted these charts for use in I.S. 1A with permission from HPVA.

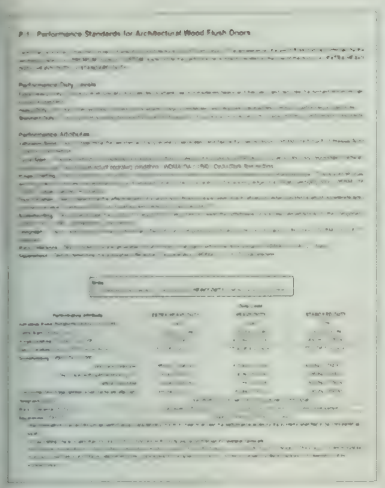


Performance, beauty and aesthetics characterize architectural wood flush doors. Source: Eggers Industries, Neenah, Wis.

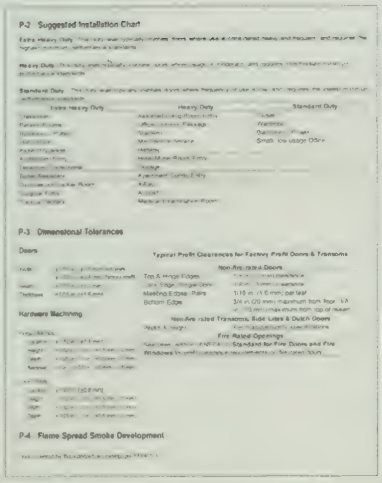
Performance duty levels & values

Integral to I.S. 1A are "Performance Duty Levels and Values." Previous industry standards had dealt with Aesthetic Grades (Premium or Custom) while the new standard now adds Standard, Heavy Duty and Extra Heavy Duty guidelines. For example, Standard Duty involves doors used in smaller facilities where frequency of use is low. Heavy Duty typically represents doors in office buildings, etc., where use is intermediate or more frequent. Extra Heavy Duty cites doors used in industrial and institutional facilities, where use is heavy and frequent. If the Performance Duty Level is not specified, Heavy Duty shall be the required standard. (See related Suggested Installation Chart on these pages for details on the types of facilities covered under each Performance Duty Level.)

Extra Heavy Duty—This duty level typically involves doors used in industrial and institutional facilities. These facilities may be schools, hospitals, medical clinics or factory environments where use is considered heavy and frequent. This duty level requires the highest minimum performance standards.



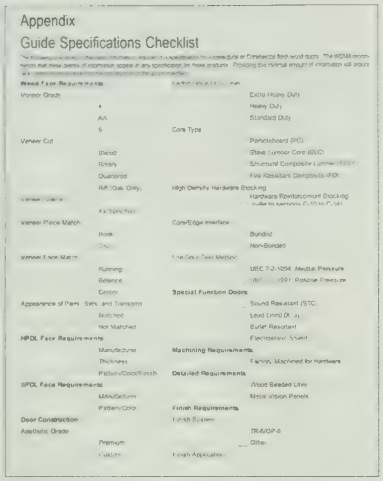
P-1 Performance Standards for Architectural Wood Flush Doors



P-2 Suggested Installation Chart

P-3 Dimensional Tolerances

P-4 Flame Spread Smoke Development



Appendix
Guide Specifications Checklist

From the WDMA I.S. 1A-04, Industry Standard for Architectural Wood Flush Doors. Left: pg. 23, Middle: pg. 24, Right: pg. 50

Heavy Duty—This duty level typically involves doors used in commercial environments. These projects include office buildings, hotels, churches and retail. This duty level requires intermediate minimum performance standards.

Standard Duty—This duty level typically involves doors used in smaller facilities where frequency of use is low. They may also apply to use in closet or wardrobe doors where use is infrequent. This duty level requires the lowest minimum performance standards.

Architects may reference Section P1 of the standard (page 23) for a complete description of Performance Duty Levels for Architectural Wood Flush Doors. Section P2 (page 24) displays the Suggested Installation Chart. Each door type page in Section C, Constructions, has a facing page with the aesthetic and performance duty levels for easy reference when specifying wood flush doors.

While the new performance section of the standard is the major focus, four additional species were added to the veneer grading tables, adapted from HPVA; positive-pressure fire door wording was added; the finishing section was completely revised and expanded; and a specification checklist was added (included within this article).

"The new I.S. 1A is a significant step forward in the evolution of this standard," says Harry Reichwald, executive vice president and general manager of Eggers Industries, Two Rivers and Neenah, Wis. Reichwald chairs the WDMA I.S. 1A Task Group. "Prescriptive specifications have been replaced by performance values and duty levels. This achieves two objectives — the specifier can select the proper door for any given application and have confidence in its performance over time, and manufacturers have more freedom to utilize innovative materials and techniques for door construction as long as they meet the performance criteria. This is a true win-win for the industry," he says.

I.S. 1A has many other significant changes which make it a cutting-edge standard, but some of the most critical within the document include the Performance Duty Levels and Values. The eight performance attributes (and appropriate test methods applicable) that classify a door and its construction into the various levels include:

- **Adhesive Bond (WDMA TM-6: Adhesive Bond Durability Test Method)** — Determines the performance of adhesive bonds in doors under accelerated aging conditions;
- **Cycle Slam (WDMA TM-7: Cycle-Slam Test Method)** — Determines the physical endurance of wood doors and associated hardware connections under accelerated actual operating conditions;
- **Hinge Loading (WDMA TM-8: Hinge-Loading Test Method)** — Determines the ability of a door stile to resist the horizontal withdraw of an attached hinge;
- **Door Finishes (Various ASTM Door Finishes test methods)** — Determines the effectiveness of door finishes to resist wear due to abrasion under conditions which accelerate actual in-service wear;
- **Screwholding (WDMA TM-10: Screwholding Test Method)** — Determines the ability of door components to resist the withdrawal of a screw perpendicular to the component;
- **Telegraphing (WDMA I.S. 1A T1: Telegraph)** — Determines minimum differential offset of core components that are visible on the face of the door;
- **Warp Tolerance (WDMA I.S. 1A T2: Warp)** — Determines the allowable variation from a flat plane within the door surface; and,
- **Squareness (WDMA I.S. 1A T3: Squareness)** — Determines the allowable differential in squareness.

Other significant standard highlights, in addition to Performance Duty Levels and Values include:

Updated Face Veneer Charts — The HPVA created new face veneer charts that apply specifically to architectural and commercial wood flush doors and WDMA adapted these charts for use in I.S.1A with their permission.

Factory Finishing — Each year, more doors are pre-finished at the factory as opposed to the construction jobsite. Improved appearance, durability, environmental compliance and quality control are a few of the advantages that factory finishing provides over jobsite finishing. The new I.S.1A has been updated to further explain the advantages and choices of finishing systems that are available, focusing on the types of finishing systems most often used for architectural and commercial wood doors.

Positive Pressure Fire Doors — Positive Pressure fire door test criteria continue to be adopted by states and municipalities across the U.S. To meet requirements, openings typically require an intumescent seal or gasket applied either to the frame or concealed within the door itself. Understanding positive



Left: Architectural wood flush doors are appropriately characterized in the standard according to use. Source: Eggers Industries, Neenah, Wis.
Right: Architectural wood flush doors are covered under a newly revised performance standard. Source: Algoma Hardwoods, Algoma, Wis.

pressure requirements and communicating them to the door manufacturer is crucial in meeting code requirements. I.S.1A explains the mechanics of positive pressure and uses a new door construction identifier (PP) to help clarify specification.

One of the most recent developments with regards to fire doors has been the changeover to positive pressure testing versus neutral testing methods. An issue literally years in discussion, this technical and scientific debate has subsided, and positive pressure is quickly becoming the standard method of testing required by major building code bodies coast to coast. Some 40 or so states (or major cities within those states) have adopted or soon will either adopt the Uniform Building Codes 7-2 1977 or the International Building Code 2000 or 2003. (See related story on these pages for key phrases used in determining the exact nature [positive or neutral pressure] of fire doors.)

Specification Checklist — Wood flush door guide specifications vary, but there are certain aspects that must be addressed to ensure that the doors meet the requirements of the specifier and building owner. I.S.1A includes a specification checklist, providing a reference to make sure all key points are addressed. (See the Guide Specifications Checklist included on these pages.)

The new WDMA I.S. 1A door standard also contains a totally updated prefinishing section that helps clarify the different types of finishing systems that are available and their performance characteristics. In the past, standards detailed 16 different systems most of which are not typically utilized in the finishing of architectural and commercial wood doors. While identifying all 16 systems, the new standard focuses on the three systems that are typically used in the industry. Those highlights include:

Factory Finishing — Most architectural and commercial wood doors are now specified to be pre-finished at the factory, prior to delivery at a jobsite. State-of-the-art equipment operated in controlled conditions result in the best possible appearance. The raw wood doors are prepared in automated sanding equipment, removing scuffs, scratches, and handling marks before the application of stain and clear top coats. Field finishing cannot duplicate the conditions and results.

Samples that represent the color, build, and sheen are supplied to a door manufacturer who matches the sample and submits it for approval to the specifier. Upon approval, the door manufacturer then applies the stains and finishes that duplicate the appearance of the sample submitted. The process of sample generation and approval typically takes five to 10 days.

Finish Systems — The system that is most often specified is a TR/OP 6 - Catalyzed Polyurethane which provides the highest performance properties of production finishes. The TR/OP6 finishes are normally roll coated with high solids, volatile organic compound (VOC) free material, and cured using ultraviolet (UV) light technology. This is opposed to older technology where a low solids, solvent (VOC) based material is sprayed. Other finishes that are sometimes specified are TR/OP - 2 Pre-Catalyzed Lacquer and a TR/OP 4 - Conversion Varnish. The performance properties of these finishes are below that of a TR/OP 6 but do provide an architectural/commercial finish. They are typically spray applied with solvent based materials.



The addition of Low Pressure Decorative Laminate doors and other faces, finishes species and materials reflects new product trends. Source: The Maiman Co., Springfield, Mo.

A chart describes all three finish systems, specifically detailing how well each system resists a variety of chemicals and solutions, wears, and how well the finish adheres to the substrate and underlying coats of finishing material. Chemical descriptions may vary from those printed, but performance levels of a finish system must meet or exceed those printed to be considered equal.

Low Pressure Decorative Laminates (LPDL) — LPDL has been added to the standard as an alternate face material. This material is a decorative laminate paper that has been saturated in reactive resins, and hot pressed to the face of the door, creating a hard crosslinked thermosetting permanent bond. Many colors and woodgrain patterns are available and the addition of LPDL reflects new product trends in the manufacturing community.

Visual inspection standards

Also new in I.S. 1A is a chart which describes what types of defects are not acceptable when the door is in the installed condition. A chart describes to what degree a number of manufacturing, finishing and touch-up marks are unacceptable and must be repaired.

The new edition of WDMA I.S.1A further includes updates and clarification of several aspects of the veneer specification charts. The specification charts identify the color and matching, natural characteristics, manufacturing characteristics, and special characteristics that are allowed in the different veneer species and grades. The significant highlights and changes to that section include:

Additional Species — Anegre, Beech, Makore, and Sapele have been added to the specification charts, as these species are becoming more popular among specifiers. These woods are readily available and provide some alternative and striking appearances.

"Natural" Veneers — Historically, the terminology of "natural" in primarily Birch, but also Ash, Maple, Beech and Poplar veneer has created considerable misunderstanding concerning the appearance of a door face. The term "natural" when attached to these species allows the presence of light colored sapwood and dark colored heartwood in any combination, resulting in a wide variation of light and dark veneer appearance within a door face, and from door to door. Other terminology such as "white" will allow only light colored sapwood in the door face and the term "red or brown" will allow only dark colored heartwood in the door face. Additional highlighted text and glossary definitions have been added to caution the user of the "natural" appearance.

Slope and Swing— In the past, only rift veneers listed slope and swing restrictions which were in place to maintain the straight grain appearance of these door faces. Now quartered veneers are subject to the restrictions as well. Previously, quartered veneers have been subject to the restrictions, but only by association. The restrictions themselves have not been changed. Grain slope is restricted to 1 inch (25.4 mm) in 12 inches (305 mm) maximum, and sweep is 2 1/2 inches (63.5 mm) in 12 inches (305 mm) maximum. ■

Positive Pressure or Not?

I.S. 1A explains the mechanics of positive pressure and also includes important facts to consider when reading specifications. Doors may be either neutral or positive pressure, depending on local code. Using these key words as a guide, the architect may be able to determine whether or not a door is tested under positive pressure methods.

Key phrases indicating positive pressure:

- UBC 7-2-1997 UBC Fire Test
- IBC 2000 or IBC 2003 Code
- NFPA 5000 Code
- UL 10-C Fire Test
- ASTM 2074-00 Fire Test
- After 5 minutes into the test the neutral pressure plane should be at 40"
- Shall meet positive pressure requirements
- Intumescent seals — not telling you it is positive pressure by implying that it is.

Key phrases indicating negative (neutral) pressure:

- UL 10-B Fire Test
- UBC 7-2-1994 UBC Fire Test
- UBC 43-2 UBC Fire Test
- Tested at atmospheric pressure
- Neutral pressure
- Negative pressure
- ASTM E-152 Test Method

Phrases that don't tell you if it is positive or negative:

- NFPA 101 Life Safety Code
- NFPA 105 Smoke and Draft Control Document
- NFPA 252 Fire Test Method which gives the option to be positive or negative
- UBC With no date given could be either positive or negative
- UL 1784 Air Leakage Test for Door Assemblies
- NFPA 80 Installation Standard for fire doors and windows

Source: WDMA I.S. 1A, page 30.

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at:

archrecord.construction.com/resources/conteduc/archives/0411wdma-1.asp

To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, contact Alan Campbell at WDMA, 847-299-5200 or email acampbell@wdma.com. The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Understand the difference between performance vs. prescriptive design standards.*
- *Identify interior wood architectural door types based on where they are to perform within the facility.*
- *Become familiar with the new distinct performance levels or grades for these doors which are crucial in their overall specification.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 321. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. Which of the following best describes a product (in this case an architectural wood flush door) that is manufactured to a performance-based quality standard?
 - **a.** One which focuses primarily on aesthetics and construction materials.
 - **b.** One which looks at the built-environment.
 - **c.** One which considers the built environment and the duty level of the door.
2. Which of the following statements might best describe I.S. 1A?
 - **a.** A new standard for both interior and exterior architectural products.
 - **b.** A new standard for interior architectural door specifications which focuses on the materials used in its construction.
 - **c.** A revised and revamped standard which focuses on how the product is expected to perform in the field rather than how to prescriptively fabricate it.
3. What is the overall benefit of the standard to the architect, specifier and building owner?
 - **a.** Provides rules and requirements for specifying architectural doors.
 - **b.** Focuses entirely on grades and aesthetic appearances of interior products.
 - **c.** Relates a door's construction to performance and frequency and severity of use.
4. With this standard, door construction may vary, as long as the specified duty level is met or exceeded.
 - **a.** True
 - **b.** False
5. Performance Duty Levels and Values in the standard are reflected by which of the following terms?
 - **a.** Premium grade
 - **b.** Custom grade
 - **c.** Standard, heavy and extra heavy duty
6. Which of the following are included in the list of performance attributes which classify a door and its construction into the various Duty Levels:
 - **a.** Adhesive bond durability, cycle slam and hinge-loading
 - **b.** Door finishes
 - **c.** Screwholding, telegraph, warp tolerance and squareness
 - **d.** all of the above
7. The performance levels and values of architectural wood flush doors include:
 - **a.** Aesthetic grades of Premium and Custom
 - **b.** Standard Duty, Heavy Duty and Extra Heavy Duty
 - **c.** Both a and b
8. Overall, the biggest change in the revised specification is:
 - **a.** New tables and finishing charts
 - **b.** The shift to performance from prescriptive
 - **c.** A guide specification checklist and new species/materials added
9. Aesthetics have been completely removed from the standard.
 - **a.** True
 - **b.** False
10. In the updated finishing section, which of the following is true?
 - **a.** Focuses on 16 different systems for finishing architectural wood flush doors.
 - **b.** Identifies three systems typically used in the industry.
 - **c.** Identifies 16 systems, but focuses on the three systems typically used in the industry.

About WDMA

The Window & Door Manufacturers Association (WDMA) is a trade association representing the leading U.S. and Canadian manufacturers and suppliers of windows and doors for the domestic and export markets (www.wdma.com). For further information, contact WDMA at: 1400 East Touhy Ave., Suite 470, Des Plaines, IL 60018; phone 847-299-5200; e-mail: admin@wdma.com.



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Lighting

An aquarium anchors a Berlin hotel, while natural history exhibits venture beyond black-box dioramas

BRIEFS

The Lighting Research Center at Rennselaer Polytechnic Institute has announced a three-day workshop surveying architectural applications with light-emitting diodes. The Troy, New York–based center will present the LED Lighting Institute on April 27–29, 2005. Participants will earn 20 continuing education credits. For information and registration, contact Dan Frering, 518/687-7149, or e-mail freid@rpi.edu.

Japan is supporting solar home lighting in Nepal, reports *Japan Today*. The Japanese government recently granted $43,000 for 252 sets of 14-watt solar panels and LED lamp accessories required to support residents of the remote village of Bhachok in Western Nepal.

The International Association of Lighting Designers is accepting submissions for its 22nd annual architectural lighting awards program until December 1. Go to www.iald.org, or call 312/527-3677 for information.

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Virgile and Stone Associates

299 Lighting Products

An eclectic trio of projects this month showcases dynamic architectural lighting supporting unexpected approaches to traditional building types: a hotel, natural history museum, and fitness center. Each project employs a variety of fixtures to emphasize changes in interior scale and perspective. Illumination also orients patrons and guides them through a progression of rooms.

A towering aquarium welcomes guests in the lobby of the Radisson SAS Hotel in Berlin. While such a set piece might have overwhelmed other architectural elements of the atrium, architect Virgile and Stone Associates plays off the eye-catching tank with a series of curved forms—a bar, a bronze wall divider—that spin out from the central tower like waves. Cold-cathode, halogen, and fiber-optic lighting brings the eye down to the human scale of these features in the vast space. In the hotel's restaurant and lounges, glass surfaces serve as canvases for a variety of lighting effects. Bernd Behrendt of Kuehn Bauer Partner and Volker von Kardorff were local lighting consultants enlisted to implement architect Carlos Virgile's creative vision.



The hall of mammals at the Smithsonian's National Museum of Natural History in Washington, D.C., is enjoying new life as a revamped attraction that engages patrons in a more interactive experience. With many animal specimens freed from the typical diorama format, patrons take a figurative walk through an African savannah, an Arctic tundra (photo right), a South American rain forest, and Australian grasslands. Suzanne Powadiuk helps take the exhibits beyond a static format, with layered lighting that sparks the imagination of patrons of all ages.

For the Equinox fitness center at the base of New York City's Time Warner Center, Platt Byard Dovell White collaborated with Cosentini Lighting Design to create a 40,000-square-foot facility two levels below grade. Architectural lighting varies the ambience in support of each exercising mode. The architects and project lighting designer Fernando Soler are at work designing additional Equinox locations across the country. The team has helped establish—and found a way to adapt—finish and fixture standards that can create an inviting sense of place, even underground. *William Weathersby, Jr.*



For a livelier informative journey through epochs of natural history, the reconfigured exhibits take a more abstract approach, with animal specimens grazed by varied light sources (below and opposite).

Layered lighting by Suzanne Powadiuk creates drama in restaged **National Museum of Natural History** exhibits

By Alice Liao



Dioramas have been the backbone of natural history museums for more than a century. Last year, however, the Smithsonian Institution's National Museum of Natural History broke with this tradition when it unveiled the revamped Kenneth E. Behring Family Hall of Mammals, one of the largest projects undertaken by the museum since opening in 1910. The 25,000-square-foot facility's Beaux-Arts interiors, originally designed by architects Hornblower and Marshall, were restored by the firm of Hayes, Seay, Mattern & Mattern. The new installation enhances a collection of 274 mammals with a host of high-tech, interactive media. Exhibition designer Reich + Petch Design International has situated most of the specimens in straightforward, open displays that keep the focus on the animals while showcasing the larger backdrop of the interiors. "Because the structure of the exhibits could not touch the historic fabric of the building, we were creating a building within a building," says director of exhibits Stephen Petri. "Our challenge was twofold: To tell the story of the collections and to weave that story into the architectural experience of discovering the gallery."

With rooms designated for each continent, the displays are organized geographically as a way to explore the impact of different habitats on the evolution of mammals. The layout of the spaces and exhibit placement help move people through the building, an important function for a venue receiving 10 million visitors a year. Because all of the animal installations are static, audiovisual effects and dynamic lighting conceived by Suzanne Powadiuk immerse visitors in the drama of evolution. "The way to bring these objects to life was by giving people a sense that the context for these creatures is constantly shifting," says Petri. "Evolution occurs over long spans of time but is a response to changes that happen moment by moment."

This idea of environmental flux is vividly expressed in the centerpiece of the project, the Africa Hall. From the entrance, where luminous signage and pylons edgelit with LEDs introduce key themes, visitors enter the 56-foot-tall space, drawn farther inside by a leopard perched on a tree limb. As patrons meander through the exhibits of African wildlife, a massive laylight overhead begins to darken, signaling the end of the dry season and the approach of a rainstorm. To produce the illusion, Powadiuk concealed PAR38s and color scrollers in the attic between the laylight and a skylight, both of which were restored. Quartz PAR56 fixtures, mounted along the edges of the glass, provide ambient illumination while photocells adjust for daylight fluctuations.

The color shifts are accompanied by the sound of thunder and strobes of lightning, which are simulated by a xenon flasher. Rear-projected onto frosted-glass panels and also contained in the floor, video images depict the changing landscape. The storms, which occur every 10 minutes, are programmed into a control system that also operates the lighting of a rain forest, painted onto layers of a 40-foot-tall scrim. Anchoring the Africa Hall, the panels vary in transparency, adding three-dimensionality, and conceal a network of catwalks that support an array

Alice Liao is a freelance writer based in Teaneck, New Jersey. She is a frequent contributor to the special lighting section of RECORD.

Project: *Kenneth E. Behring Family Hall of Mammals, Smithsonian Institution, National Museum of Natural History, Washington, D.C.*
Lighting designer: *Suzanne Powadiuk Design—Suzanne Powadiuk, principal designer*
Architect: *Hayes, Seay, Mattern & Mattern*
Exhibit designer: *Reich + Petch Design International—Tony Reich, principal; Stephen Petri, Fang-Pin Lee, Pauline Dolovich, Edmund Li, Sharon Ohno, Leslie Carelton, Heather Chiao, Stan Jurkovic, Dave Brohman, Ron Flood, project team*





of warm and cool fluorescents, MR16s, and theatrical image projectors. As the lighting shifts from the back to front of the scrim panels, the trees appear to shimmer with sunlight, casting patterns on the floor.

Set in conceptual environments and each articulated with key and fill light, the animals are presented like objects of art. Illumination is furnished by MR16s mounted on steel armatures, which extend above the displays and support additional graphics keying circulation paths. The MR16s were used throughout because of their precise color rendering. The steel armatures, notes Powadiuk, were developed to resolve the challenges presented by the ceiling height and to minimize visual clutter. "We wanted the exhibits to be as open as possible and the laylight and upper portion of the hall to remain unobstructed," she says. Plainly visible, the steel framework draws one's eye toward the ceiling, emphasizing the scale of the space and further integrating the appreciation of the architecture into the experience of the exhibits. The solution is also fitting, Powadiuk adds, as the steel elements resemble the skeleton of a whale, which is the largest member of the mammal family. ■

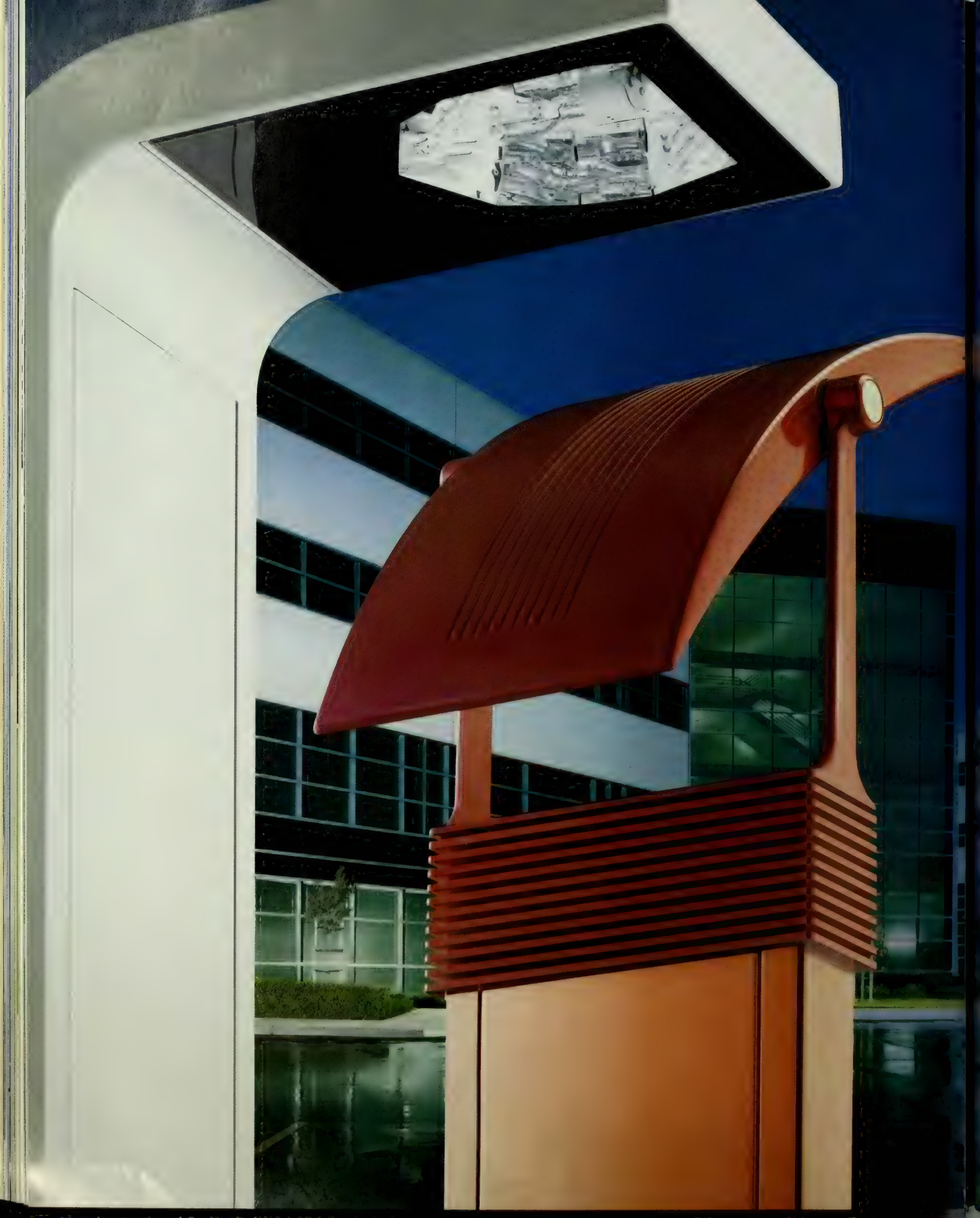
Sources

Track lighting: *LSI; Litelab*
Fiber optics: *Fiberstars*
Low-voltage lighting: *Clikstrip*
Theatrical fixtures: *ETC*
Fluorescent striplights: *Belfer; Metalux*
Path lights: *Bega*
LED signage: *Optosign*
PAR fixtures: *Zumtobel/Staff*
Custom lighting: *Lighting Nelson and Garrett*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



A new steel armature supports downlighting by MR16 fixtures (above and opposite, top). Fluorescents, theatrical projectors, and video elements create abstract images that evoke natural climates and locales. For more self-contained exhibits (opposite, bottom), fiber optics light text panels and specimens.



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Illumination by Cosentini Lighting Design creates a sense of place at an **Equinox** fitness center in New York

By William Weathersby, Jr.

Towering above New York City's Columbus Circle, the Time Warner Center, designed by Skidmore, Owings & Merrill, pivots toward impressive views of Central Park. For the new Equinox fitness club at its base, however, interior architect Platt Byard Dovell White was charged with creating a sense of place in a windowless facility two levels below grade. The location anchoring the new multiuse center was attractive to Equinox, which is in the midst of a nationwide expansion, but the irregularly shaped cellar posed a challenge for accommodating the program. "Large pieces of the building's structure and massive conduits were coming through the space," says principal architect Ray Dovell, AIA. "It looked like a messy, horizontal duct. For Equinox, we had to establish a floor plan with a clear notion of orientation, and a progression of rooms whose fitness functions are telegraphed to patrons."

Taking their cue from the arc of the Columbus Circle traffic interchange in front of the complex, the architects created a radial series of columns within the club as the curving spine of the plan. A main exercise area spans 400 feet, bordered by ramps leading up to spa-treatment and locker rooms. Additional glass-enclosed exercise rooms follow the progression of the arc. Throughout the club, sight lines offer patrons views into exercise areas beyond each space to avoid a compartmentalized feeling. Robust materials including metal, glass, and colorful mosaic tiles, stand up to heavy use while demarcating different exercise zones.



Supporting the architect's space-making is illumination by Cosentini Lighting Design, which helps to establish a varied landscape with clear orientation cues. From subtle shaded pendants in a yoga studio to the blue jelly-jar fixtures glowing

Project: *Equinox at Columbus Circle, New York City*
Lighting designer: *Cosentini Lighting Design—Stephen Margulies, principal; Fernando Soler, senior lighting designer*
Architect: *Platt Byard Dovell White Architects—Ray H. Dovell, AIA, partner in charge; Matthew Muller, project manager; Erica Edelman, Ivan Morales, project team*



The exterior of the Equinox club (above) has stainless-steel signage lit with MR16s. In a fitness classroom (below), dimmable T8 fluorescents are gelled and set behind circles measuring 1, 3, and 4 feet in diameter.



The entry and juice bar incorporate PAR30 wall washers, T5 linear fluorescents, and MR16 downlights. A yoga studio (opposite) is enhanced by dimmable pendants housing 100-watt halogen lamps.

over the heads of cyclists in a spinning class, "lighting is dimmable with a variety of lamp sources to create a range of experiences for clients," says lighting designer Fernando Soler.

In the street-level entrance lobby, the only space in the club graced by daylight, a juice bar and colorful graphics welcome gym members. Dimmable PAR30 halogens wash the red resin-treated wall panels, while linear fluorescents mounted vertically create a sculptural presence.

FROM THE POOL AND LOUNGES TO ROOMS FOR YOGA AND SPINNING CLASSES, SPACES FEATURE TAILORED LIGHTING.

A ceiling cove is uplighted with T5 fluorescents for ambient illumination, while MR16s downlight the retail countertop.

Reached by elevator, the Equinox reception area visually introduces the club's "exercise arc" with a check-in counter set before a cylindrical structure clad in ruddy Venetian plaster. Three frosted-glass pendants housing dimmable halogens light the countertop, while MR16 downlights graze the plaster wall. Nearby, a row of glass-enclosed cubicles for membership advisers are outfitted like small living rooms or lounges, with combination up/downlights and dimmable pendants. Wall washers fitted with 60-watt halogens are set in a continuous cove to illuminate textured plaster walls behind each Equinox counselor station.

For the sweeping main exercise area, Soler specified a galvanized steel pendant that combines uplight and downlight components. Each fixture features a two-lamp striplight with a modified reflector. T5 fluorescents illuminate the rough concrete ceiling, giving it a burnished look. Metal-halide and incandescent downlights provide focused illumination for the weight-lifting areas. Indirect lighting avoids glare on flat-screen televisions within the cardiofitness section of the room. Sconces wall-mounted above mirrors contain T5 lamps within aluminum housings with frosted acrylic lenses. Along the perimeter circulation route, a continuous-curve fixture visually fills in the edge of the ceiling plane with T8 fluorescents mounted on the fascia. Downlights graze the green mosaic tile walls that front the locker rooms, indicating the next zone.

In the men's and women's changing rooms, T5 striplights atop rows of lockers indirectly light dressing areas. Circulation routes through each area are enhanced with compact fluorescents fitted with wide lenses to provide higher light levels. MR16 wall washers in each shower enclosure highlight green mosaic tile walls. At grooming stations, 40-watt 4-by-4 halogen fixtures are sheathed in frosted glass for flattering side light.

The main fitness classroom's ceiling is graced with a random





pattern of illuminated discs in three sizes: 1, 3, or 4 feet in diameter. Fitted with dimmable T8 fluorescents, each circle features gelled fixtures in combinations of either white and red or white and amber. Wired on two circuits, the room's light levels and hue can be adjusted to suit a session's exercise routine or music. The colorful lighting plays off laminated interlayers of yellow and orange film set within the room's curtain-wall enclosure. PAR38s fitted with barn doors spotlight the fitness instructor.

"We wanted to make the yoga classroom as warm and meditative as possible," says Soler. Halogen pendants cloaked by cloudy, textured shades cast diffuse light throughout the wood-floored space. In a children's activities room nearby, T12 fixtures are set in overlapping channels of different heights and colors for a whimsical look. The swimming pool's canopy, meanwhile, features an asymmetrical cove uplit with T8 fluorescents, while underwater lights provide an ethereal glow. At this Equinox club, sophisticated lighting enhances the many modes of keeping fit. ■

The main workout area (above) features T5 and T8 fluorescent uplights and metal-halide downlights. A cove with T8 fixtures illuminates the ceiling over the pool (below).



Sources

Recessed downlights: *Cooper Portfolio*
Fluorescent striplights: *Bartco Lighting*
Skylight fluorescents: *Legion*
Surface-mounted linear fluorescents: *Xenon Light*
Pool fixtures: *Paramount; Kurt Versen*
Custom pendants: *Resolute*
Ceiling fan: *Modernfan*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

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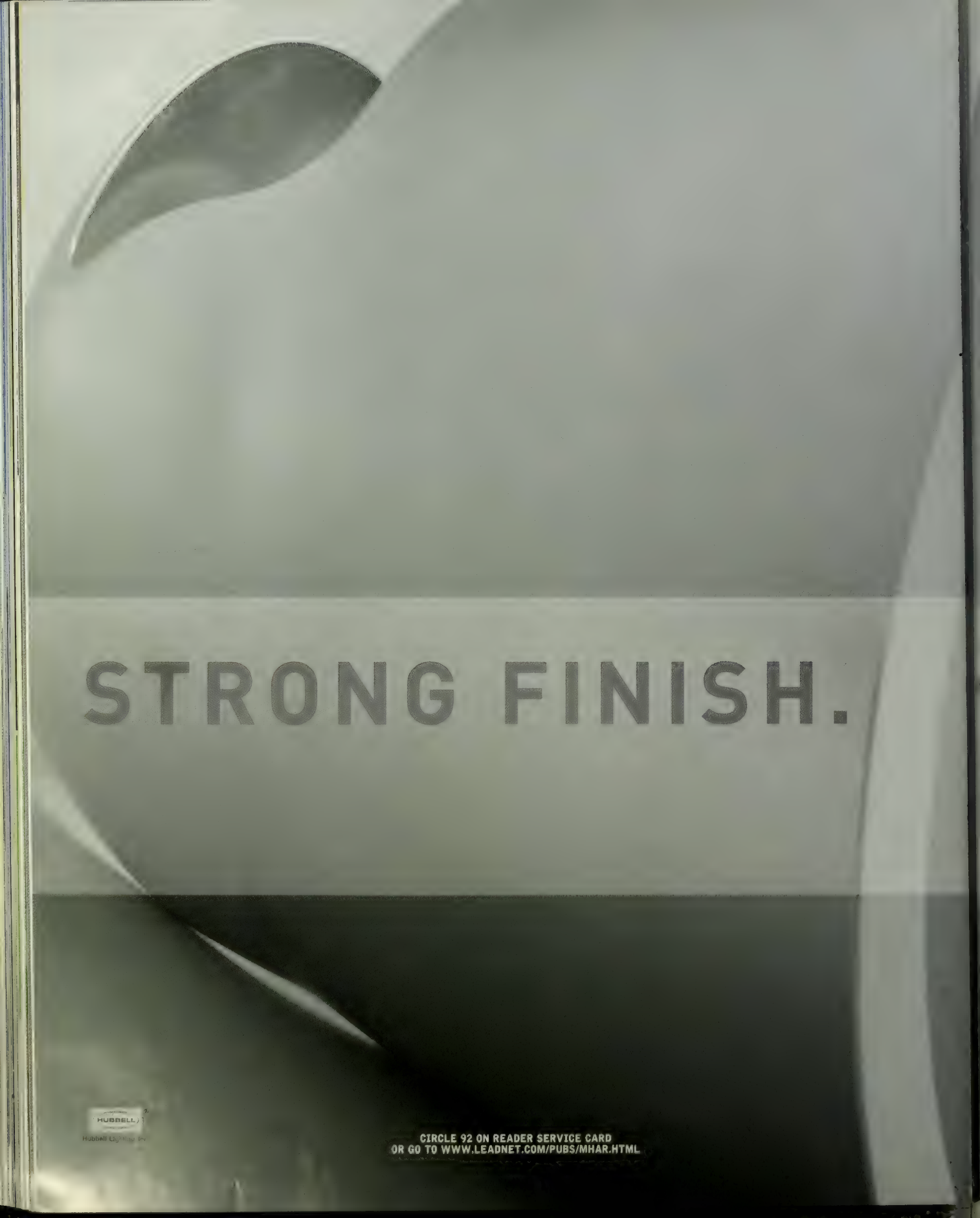
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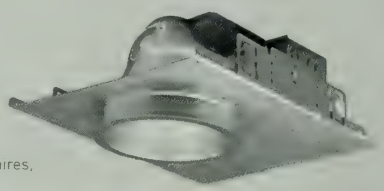
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At the **Radisson SAS Hotel** in Berlin, Virgile and Stone leads a team threading public spaces with light

By William Weathersby, Jr.



An illuminated cylindrical aquarium and internally lit check-in stations are dramatic elements greeting guests (opposite). Floor-recessed halogens add ambient light. A curving bar wrapping the central tower is lit with white cold cathode (above).

When guests check into the new Radisson SAS Hotel in Berlin, they encounter intriguing interiors quite unlike what they might expect to find at a chain hotel geared toward business travelers. Rising at the center of the atrium lobby, a spectacular, five-story-tall cylindrical aquarium glows from within. Proceeding to the check-in area situated at the base of the towering tank, patrons arrive at individual registration stations that have the look of conceptual sculpture. "This is a big departure for Radisson SAS," says principal architect Carlos Virgile of London-based Virgile and Stone Associates. "It is hotel design writ large as a marketing tool."

Commissioned to design the public spaces of the hotel (the 427 guest rooms were orchestrated by BHPS Architects), Virgile worked with a team of lighting consultants—including the Berlin-based Kuehn Bauer Partner and specialty lighting expert Volker von Kardorff—to imbue the atrium lobby, restaurants, and bars with a play of color, illumination, and abstract aquatic imagery.

Nestled in the heart of Berlin, the hotel is part of the Cityquartier DomAquarée, a multiuse development that also houses shops, apartments, and offices. Water is the dominant theme of the complex, and the impressive aquarium, called the AquaDom, is its signature element. Billed as the world's largest freestanding cylindrical aquarium—measuring 52 feet high and 36 feet in diameter—it is operated by the neighboring Sea Life attraction. The 264,172-gallon saltwater acrylic tank is filled with 2,500 tropical fish. Though serving as a showcase in the hotel lobby and visible from its 96 business-class guest rooms, the aquarium is accessed by admission from a separate entrance. Patrons ascend via a split-level glass elevator at its center to view the sea life. Fiber-optic lighting and the elevator's halogen fixtures cast light and shadow on the tank's fish and outward to the hotel lobby beyond.

"The aquarium certainly dominates the lobby, but the scale of the atrium allowed us to establish a variety of complementary focal points," Virgile says, "some active and dynamic, others more contemplative." The central feature of the public space at a more human scale than the aquarium is the curved sculptural form that serves as its pedestal; it is the spoke around which hotel guest circulation flows. Fluorescents fitted with red gels, contrasting with the vibrant blue of the tank, uplight the structure and the underside of the aquarium.

Five hotel check-in stations are served by podiums constructed of travertine and sandblasted glass. Fiber-optic fixtures backlight a veneer of pebbles set inside the glass of each station. Color wheels periodically

Project: *Radisson SAS Hotel, Berlin*
Owner: *Deutsche Immobilien Fonds*
Building architect: *NPS Tchoban Voss—Axel Binder, project architect*
Interior architect, lighting concept: *Virgile and Stone Associates—Carlos Virgile, principal*
Lighting consultants: *Kuehn Bauer Partner—Bernd Behrendt; Volker von Kardorff*
Project manager: *PSG—Jan Karow*



The design team juxtaposed opaque and translucent glass, both tinted and clear, to create abstractions of water in the lounge (left) and seating areas (below). Fiber-optic, halogen, and cold-cathode fixtures heighten the illusion. The Heat restaurant (bottom) features cooking stations enhanced with backlit glass canopies.





change the hue of the illumination. Behind the counters, a travertine and glass screen frames natural sea-fiber materials and is also lit with integrated fiber optics.

The lobby bar curves around the central cylinder. Topped by a concrete counter, its vertical surface is clad with timber slats, illuminated by white cold cathode to highlight the wood texture. Establishing a border between the bar and other sections of lobby seating, a curving sculptural element constructed of gilded bronze is uplit with floor-recessed halogen fixtures. As a quieter option for guests, a coffee bar adjacent to the atrium lobby is illuminated by incandescent floor lamps with stained oak bases.

A staircase framed by glass side walls leads from the lobby to the Aqua Lounge on the lower level. Following the staircase's descent,

CUED BY A TOWERING AQUARIUM, GUESTS MOVING THROUGH THE HOTEL ENCOUNTER PLAYS OF LIGHT MASKED BY GLASS.

the glass panels gradually shift from opaque to clear to reveal the lounge's water-themed environment. Within the 60-seat space, vertically arranged fiber-optic strands seem "like stalactites of light," Virgile says. "The concept of the lounge is to suggest a watery, almost aquariumlike feeling. The lighting also is meant to evoke streaks of light refracted underwater." Ceiling-mounted white-cold-cathode elements ring the top of structural columns for a halo effect. A modular wall of blue acrylic is backlit with additional fiber-optic fixtures. Low cocktail tables are internally lit to cast ambient light on the faces of patrons. Other theatrical lighting effects, such as changing projections of aquatic images, sustain the mood.

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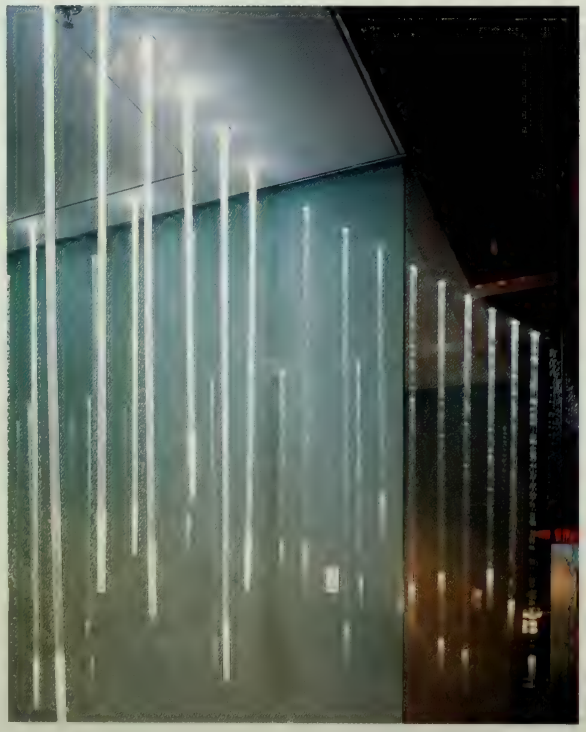
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A staircase leading from the lobby to a lower-level lounge is framed by glass panels (above left). Both the panels and stair treads are illuminated with fiber-optic fixtures. Architect Virgile calls one lounge effect "stalactites of light" (below). Tables in the Noodle Kitchen (above right) feature center strips of light.



Adjacent to the Aqua Lounge, the 80-seat Noodle Kitchen is a casual restaurant showcasing Asian fusion cuisine. It is also accessible from the street, with a ramp leading from the entrance to the heart of the dining area, passing along a metallic mesh-clad wall on which theatrical projectors layer images of undulating water. Walls clad in Zebrano timber, metal mosaics surrounding columns, and a bar with a surface simulating off-white cracked porcelain are tactile details. Long wood tables feature bands of light inset down their centers. The color of the fluorescents can be changed for varied looks. In the evening, the lighting levels throughout the room are kept low, but the horizontal and vertical glass surfaces seem to pulsate with color and illumination.

In the 138-seat Heat restaurant, concrete plaster finishes contrast with warm wood, satin-finish metal details, and caramel-colored glass walls and ceiling elements. The space is dominated by mushroom-shaped concrete columns and an open design that allows diners to view chefs at work. A wood-burning oven, two Indian tandoor clay ovens, and a rotisserie grill add theatricality to the food preparation and presentation. Once again, the design team has harnessed light to make glass surfaces sparkle, and textured materials stand in relief. ■

Sources

Fluorescents: *Zumtobel Staff*

Custom cold-cathode lighting: *Volker von Kardorff*

Aquarium: *International Concept Management*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

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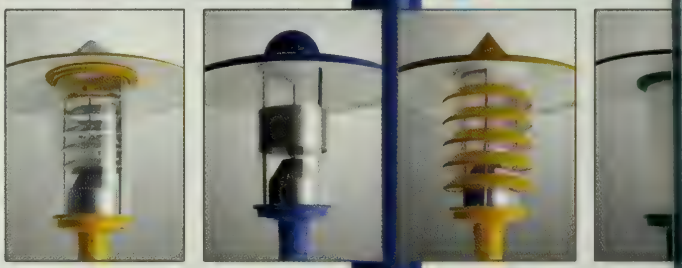


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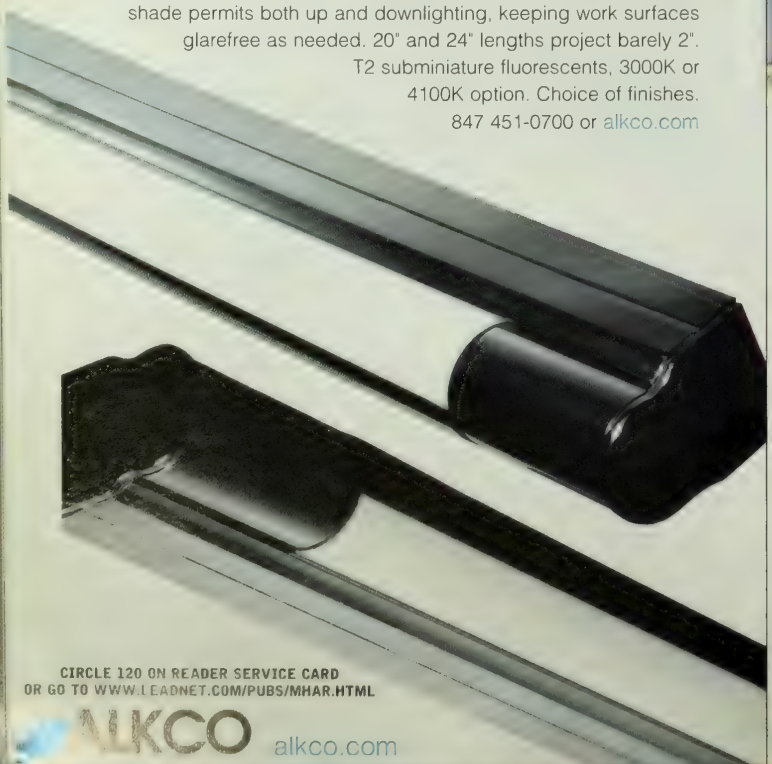
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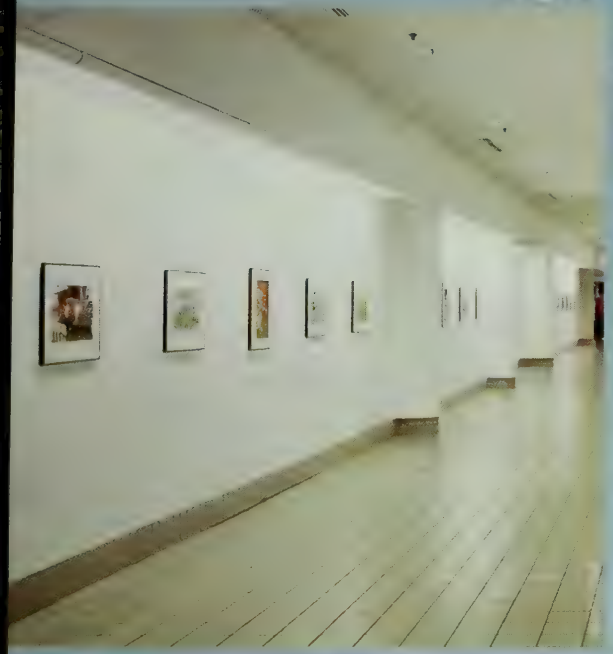
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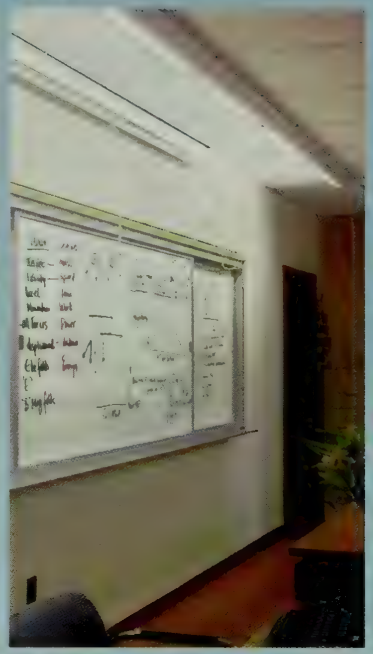
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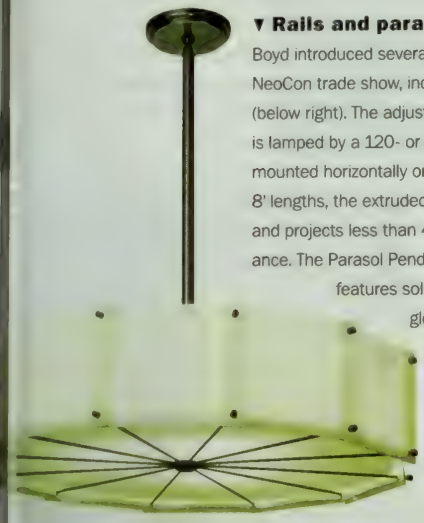
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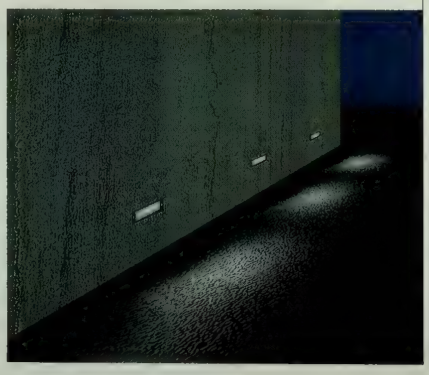
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The Tamburo outdoor light fixture was designed by Tobia Scarpa for Flos. The fixture can be attached to the floor or wall and offers downward lighting screened by a finned ring nut and diffused by a sandblasted protection glass. Weather-resistant polyurethane outdoor paint protects the closing rings, die-cast aluminum head, and triangular-shaped stem. The fixture is available in green or black and measures approximately 33" x 61" x 94" (including stem for the floor version). Tamburo will be available in the U.S. market by the end of 2004. Flos, New York City. www.flos.net **CIRCLE 201**



▲ Belgian-designed lighting collections

Belgium-based manufacturer Delta Light introduced several new collections of indoor and outdoor lighting at this year's Lightfair trade show in Las Vegas. For the Tubular collection (right), designer Fabiaan Van Severen designed fixtures that put a fluorescent tube in a range of freestanding standard and hanging lamps, wall lights, and ceiling lights. The Radar 15 ambient outdoor light (left) features a teak or corrosion-resistant stainless-steel housing. An electropolishing procedure enhances the durability of the corrosion-resistance and improves the luster of the metal. Delta Light USA, Fort Lauderdale, Fla. www.deltalight.com **CIRCLE 203**

Lighting Products



▲ Highlighting architectural forms

TIR Systems introduced five additions to its Destiny Series of architectural solid-state lighting products at this year's Lightfair show in Las Vegas. The Destiny Series offers specialized tools for lighting applications, using color and color-changing light to model and accentuate architectural forms. The product line incorporates the most powerful LEDs commercially available as the source of energy-efficient, long-lasting illumination. Destiny SL (fixture and application shown) highlights and silhouettes surfaces or structures, offering an intense, controlled, rectangular punch of colored light and a setback distance of 8' to 15'. TIR Systems, Burnaby, British Columbia. www.tirsys.com **CIRCLE 204**

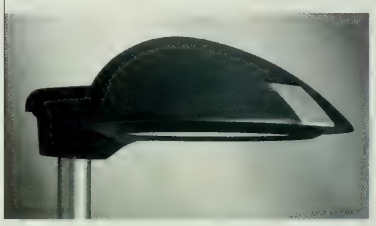


▲ Floating points of light

Schott's LightPoints LED system incorporates LEDs into transparent glass conductor plates that are protected by a top and bottom layer of laminated glass. Since the clear conductor layer allows electricity to travel throughout the entire piece of glass, there is no need for any visible wiring. Applications include skylights, glass handrails, building facades, elevator ceilings, and signage. The glass is available in rectangular sizes up to 51" x 95" and standard thicknesses of ⅜" and ½". Schott, Elmsford, N.Y. www.us.schott.com **CIRCLE 205**

▼ Roadway lighting solution

Combined with complementary arm and pole selections, the Pechina outdoor luminaire is suited for roadway and area applications for a range of commercial and municipal applications. Pechina offers three asymmetric lighting patterns designed to provide optimal performance while controlling unwanted light emitted into the night sky. Holophane, Newark, Ohio. www.holophane.com **CIRCLE 206**

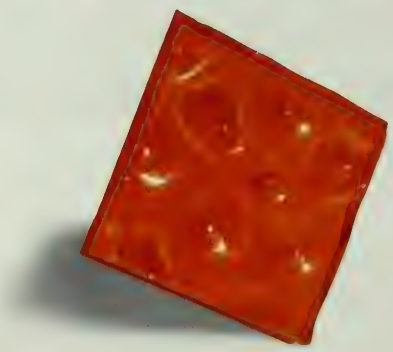


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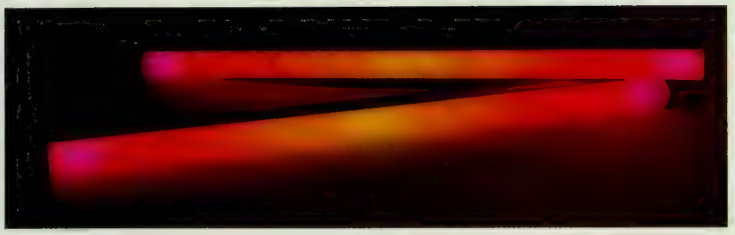
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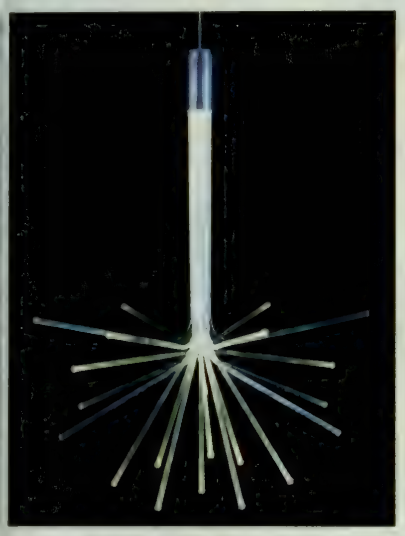
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► Programmable LED tube lighting system

Element Labs has introduced Versa Tube, a LED-based light tube controlled by video signal. Element Labs' standard Versa Drive video processor allows a range of lighting styles to be programmed, including vibrant patterns to organic flows. Preproduction units of Versa Tube were recently on display at Apple Computer retail stores to help launch the iPod Mini. Element Labs, Austin, Tex. www.elementlabs.com **CIRCLE 207**





◄ Luxe Swedish design

Following a successful premiere in Europe last year, LYX Furniture and Light introduced its products to the U.S. market during the ICFF show in New York City last May. The collection, which is inspired by traditional Scandinavian design but makes a more luxurious statement, includes the Kristall Chandelier, designed by Jonas Wannfors. The light features glowing acrylic rods that emit a combination of even background light and soft spotlights, and works with either a hidden halogen or single fiber-optic light source. LYX Furniture and Light, Stockholm. www.lyx.com **CIRCLE 208**



◄ Brighten up the city

During this year's edition of the Light+Building trade fair held in Frankfurt, the Italian company Ghisamestieri presented the Mel Dans lighting system created by the Italian design firm DA2 Strategic Design. DA2 designed the light to properly illuminate the different parts of a town or city center, including the arcades, streets, and public gardens. Made of cast aluminum and polyurethane, the lamp is available in a range of colors. Ghisamestieri, Bertinoro, Italy. www.ghisamestieri.com **CIRCLE 209**

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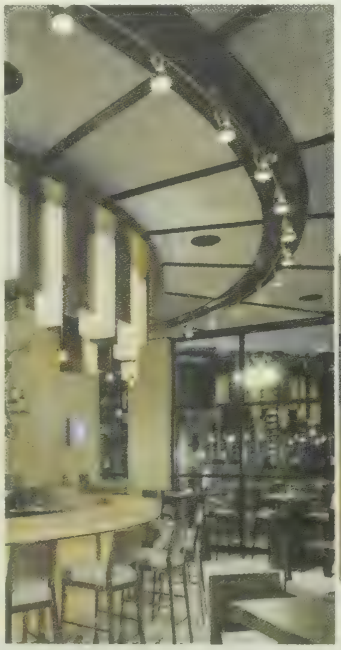
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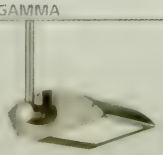
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Products

Resilient & Wood Flooring

This year, specifiers saw an increase in the cost of flooring-grade lumber and plastic resins, in turn raising the price of some **resilient and hardwood flooring** products. This month's roundup includes a range of flooring options, including reclaimed wood, rubber, cork, and **linoleum products**. *Rita F. Catinella*



Restoration rubber tile in square (top) and hexagonal (left) shapes. A selection of handcrafted hardwood options (center).

Crafty options in rubber tile and custom hardwood flooring

New York City–based Architectural Systems offers a range of wood-panel, decorative-surface, display, speciality, and flooring product lines. The ASI Flooring Group comprises natural or engineered stone, resilient, and hardwood-flooring products. The Group's latest introduction includes Restoration Rubber Tile, a collection of square, rectangular, and hexagonal shapes in vintage hues. A breakthrough technology emulates the look of antique stones with rich, natural color variation, and the tactile rubber surface offers maximum nonslip protection and durability in demanding commercial environments.

Also new from Architectural Systems is Handcrafted Hardwood Flooring, a flooring collection that is custom milled, stained, and hand-distressed, one board at a time. The rustication process accentuates the character of the natural wood product. Choice woods are used to ensure that the flooring performs in all types of environments.

Stock samples are available from Architectural Systems at no charge. In addition to its product lines, the company now offers custom architectural millwork and installation, fabrication, and design development services for store fixturing. Architectural Systems, New York City. www.archsystems.com

CIRCLE 210

Sustainably harvested exotic wood additions

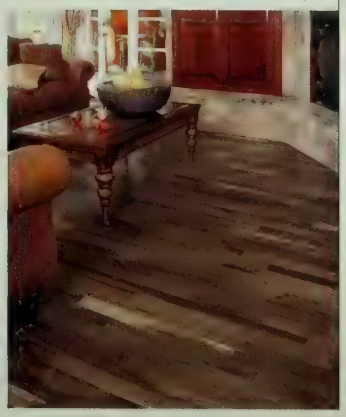
Mirage's prefinished hardwood flooring line includes a range of species, stains, and widths. This year, standard species such as red oak, maple, beech, and American walnut have been joined by two new exotic hardwood species, merbau and sapele.

From the forests of Indonesia, merbau is characterized by its distinctly contrasting grain and color, which ranges from yellow ochre to dark reddish brown. Merbau is known for a marked change in color as the wood matures and offers greater dimensional stability than many North American species. With its softer grain and reddish-brown hue, sapele, the African species, offers similar stability.

Mirage is a product of the Canadian company Boa-Franc, a firm dedicated to sustainable development through selecting materials only from responsible suppliers, financially supporting reforestation, maintaining a wood-recycling program, and using only nontoxic manufacturing products. Boa-Franc, Saint-Georges, Canada. www.miragefloors.com

CIRCLE 211

American walnut hardwood flooring.





Top-scoring classroom flooring designs

Ecosurfaces was part of the winning team awarded the grand prize in the annual StarNet Design Awards Contest, a competition that recognizes creativity in commercial interior design through the innovative use of floor covering. The project, the City Hall Academy at the Tweed Courthouse in New York City, was designed by the New York firm of Loffredo Brooks Architects and features a variety of Ecosurfaces' recycled rubber flooring colors and waterjet-cut designs. The winning design ranges from brightly colored and intricately cut floor maps for grade school classrooms to more sophisticated tonal color combinations in which the rubber floor resembles wood or cork.

Ecosurfaces is made from high-quality, 100 percent recycled tire rubber and colorful EPDM flecks. Ecosurfaces Commercial Flooring, Lancaster, Pa. www.regupol.com

CIRCLE 212



▲ Linoleum colors for North America

Armstrong crafted the Living Colors of Linoleum Collection to address emerging North American color and design trends. The collection, drawn from extensive customer, color, and industry research, includes specialized color palettes for health-care, education, and retail segments. The retail palette (sample shown above) spans more midtones for low-contrast patterning options and encompasses key neutrals and accents. Armstrong, Lancaster, Pa. www.armstrong.com **CIRCLE 213**

► Reclaimed elm logs



Mountain Lumber is a Virginia-based company that reclaims antique wood and transforms it into flooring, beams, and other architectural details. The company has imported 400-year-old Chinese elm timbers that have been revealed as old buildings are torn down for modernization. The flooring milled from these timbers has a rich butterscotch color with deep swirls of chocolate grain. Mountain Lumber, Ruckersville, Va. www.mountainlumber.com **CIRCLE 216**



▲ Expressive wood flooring

Tarkett has expanded its offering of exotic and character species in both engineered and solid wood flooring. The new sustainably harvested South American species of tigerwood and Brazilian cherry, and the North American species of Blue Ridge maple, include a wide range of colors and grain variations. The Blue Ridge maple solid wood floor, shown here in Buckskin, features a natural grayish-blue staining caused by organic elements, sugars, and starches found in the wood. Tarkett, Johnson City, Tenn. www.tarkett.com **CIRCLE 217**

► Plywood-look tiles



Alder Plywood from Amtico International gives the look of plywood with none of the disadvantages inherent in the natural material. The vinyl flooring product simulates the appearance of natural wood and works well for modern commercial interiors. Alder Plywood is available in two standard tile sizes: 12" x 12" and 18" x 18". Amtico, New York City. www.amtico.com **CIRCLE 214**

▼ Logical rubber floor coverings

At this year's NeoCon fair, nora rubber flooring introduced noraplan logic, one of the company's four new product lines. The high-performance floorcovering is wear- and slip-resistant and features a manufacturing process that eliminates the need for waxing or sealing. Each of the line's 20 colors is available in rolls and tiles and lends itself to institutional, commercial, retail, and light industrial applications. The PVC-, plasticizer-, and halogen-free flooring contains high-quality rubber, mineral fillers, and environmentally compatible color pigments. Freudenberg Building Systems, Chicago. www.norarubber.com **CIRCLE 215**



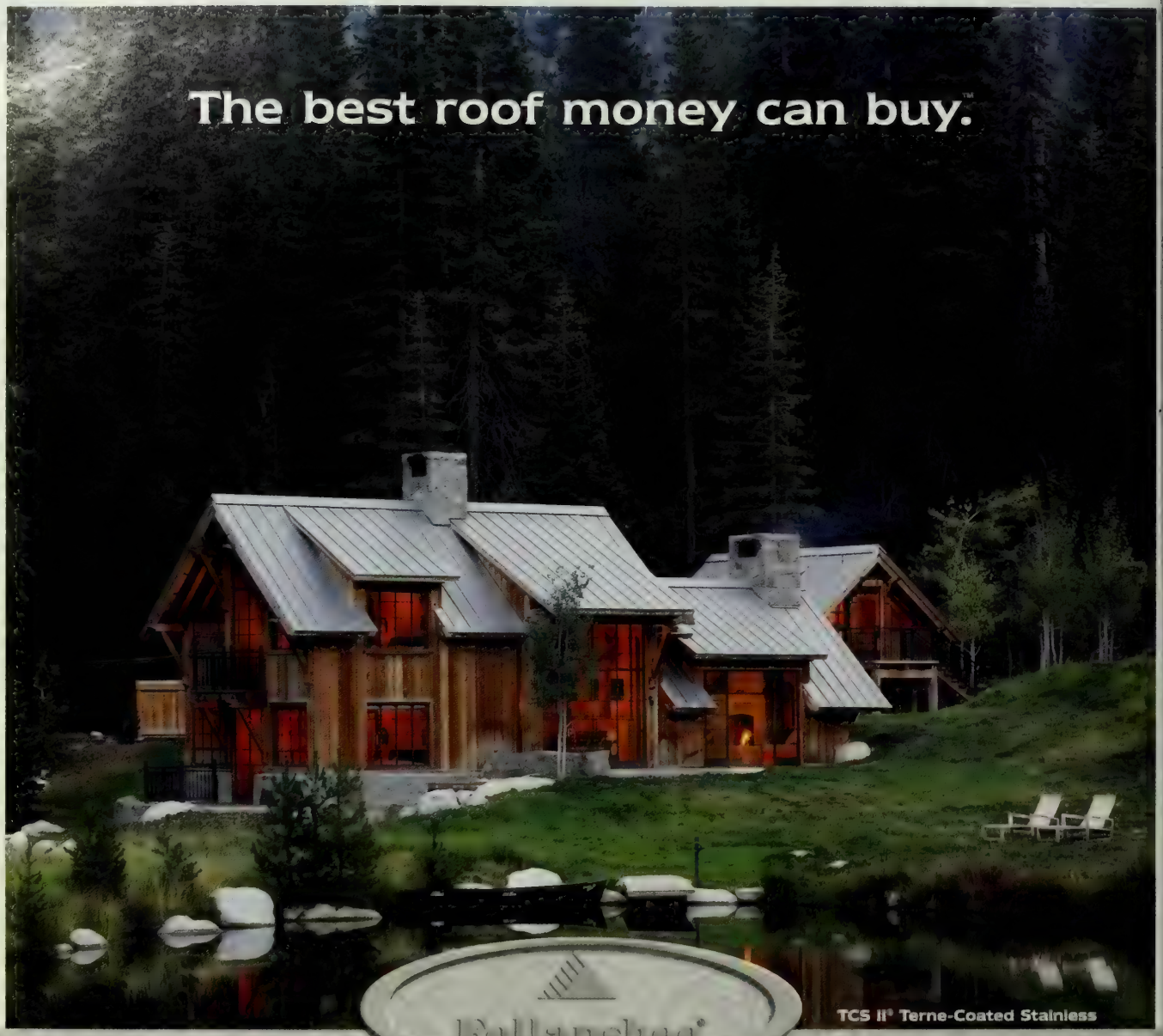
▼ There's more where that came from

Unicork Natural is a collection of nine flooring patterns in rich neutral tones made from the bark of cork trees, a renewable resource. The collection is manufactured, installed, and maintained with environmentally friendly materials, including solvent-free polyurethane binders, water-based polyurethane sealers, and water-based acrylic adhesives. The 25" x 12" tiles are offered with coordinating wall base in each pattern and color. To Market, Oklahoma City. www.tomkt.com **CIRCLE 218**




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Product Briefs



► Compact auditorium seating
By way of a proprietary synchronized mechanism, the seat and arms of the Tulip auditorium seat fold up in unison against the back, forming a compact profile for easy access or exit. A range of row configurations can be specified by joining three, four, or five seat units. Outside backs are available fully upholstered, or in wood or resin, and retractable tablets for writing/laptop use may be incorporated into them. Kron usa, Pompano Beach, Fla. www.kronusa.com CIRCLE 219





Product of the Month
Timberlane Shutters

Timberlane shutters hang on prestigious buildings around the country, including both the White House Conference Center and the British Embassy's Ambassador's Residence, in Washington, D.C. Each historically accurate Timberlane shutter is handcrafted from solid Western red cedar that has been kiln-dried to reduce the wood's expansion and contraction in weather. Each shutter is assembled using traditional mortise and tenon hardwood peg construction and can be protected with copper capping to prevent water damage. Timberlane offers a variety of outdoor shutter styles, including Panel, Louver, Bermuda, and Board & Batten shutters, and will work with customers to craft exact historical replications of existing shutters. To complement their shutter line, Timberlane offers hand-forged hardware, including Early American slide bolts, pull-rings, and shutter dogs (grape style, top right), in an extensive array of styles, shapes, and sizes. Pictured at top left are Solid Radius Top combination shutters with a fleur-de-lis cutout. Timberlane Woodcrafters, North Wales, Pa. www.timberlane.com CIRCLE 220



▲ Warming up the lounge
Lumid built this freestanding natural gas fireplace for the Air Canada VIP lounge at Dorval International Airport in Montreal. The 16' x 13' x 1½' fireplace features a steel structure covered with panels of polyester resin and molded fiberglass with a tissue-paperlike texture. The lighting system, hidden behind partitions in the upper and lower parts of the fireplace, feature openings at each end to allow easy access for maintenance. Lumid, Montreal. www.lumid.com CIRCLE 221



◄ Solar-powered curtain wall
Wausau teamed with Spire Solar Chicago to provide 11,000 square feet of SuperWall system with building-integrated photovoltaic panels for two solar-powered Exelon Pavilions that are part of Chicago's new Millennium Park. The black Minimalist towers, designed by Hammond Beeby Rupert Ainge Architects, integrate solar technology for a self-sustaining energy source. Wausau Window and Wall Systems, Wausau, Wis. www.wausauwindow.com CIRCLE 222





◄▲ Making a grand entrance
The hand-forged iron doors and entries from Bella Grande Entrances work with a range of home styles, including Mediterranean, Old World Classical, Southwestern, or Contemporary. In addition to double or single entry doors, the company designs and fabricates wine cellar doors/gates, balconies, railings, and garden, courtyard, and estate gates. Each door is 1½" thick, 14-gauge tube steel. Bella Grande Entrances, Las Vegas. www.bellagrandeentrances.com CIRCLE 223

Product Briefs

▼ High-definition patterning technology

The Mosaico wool/nylon blend carpet is the first product to showcase Ever, a high-definition patterning technology from Milliken Carpet Hospitality Markets. Fine gradations of shade and visual textures bring a lifelike dimensionality to the brightly colored, stylized mosaic carpet. Ever technology allows for great flexibility in scale, as designs are composed through a system of 36" modular carpets. The new capabilities come from state-of-the-art manufacturing facilities that stretch the length of two football fields. Milliken Carpet, LaGrange, Ga. www.maxbymilliken.com **CIRCLE 224**





▲ Adding balance to the bedroom or boardroom

Jeffrey Bernett, known for his designs for B&B Italia and Cappellini, now brings his vision to Bernhardt Design. The Balance Collection supports lifestyles where work, home, and play have become more blurred. Consisting of chairs, sofas, benches, ottomans, stools, and tables, the scaled-down pieces feature lightweight frames that permit a range of configurations for hospitality, office, or residential applications. Bernhardt Design, New York City. www.bernhardtdesign.com **CIRCLE 225**

► Indian natural stone

Amsum & Ash is the U.S. subsidiary of Tab India, one of the largest natural-stone-processing companies in the world. Tab processes Indian marble, granite, slate, quartz, limestone, and sandstone into tiles, slabs, and mosaics. Tab's quarries exclusively produce Golden Juparana granite (right), a dramatic stone from Southern India. Amsum & Ash, Tab India, Minneapolis. www.tabindia.com **CIRCLE 226**



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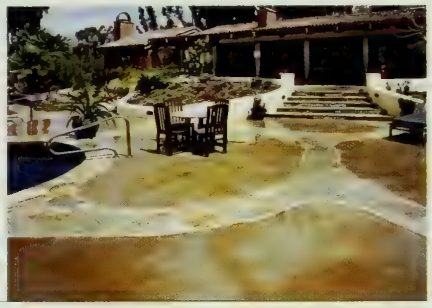


▲ Stone-based wall tile

Fritz Industries, a manufacturer of genuine marble and granite terrazzo floor tile, has introduced the Fritztile 6100 fluted wall tile and 6200 brick wall tile series. Two new patterns, fluted and brick, use marbles and granites and offer a hand-chiseled appearance. The brick style has the extra detail of having several different mortar colors that can be selected as inlaid color. The tiles measure approximately 12" x 12" in a ¼" thickness. The colors available range from black, white, and cream to pink, green, and gold. The tile comes with a 20-year wear warranty. Fritztile, Mesquite, Tex. www.fritztile.com **CIRCLE 227**

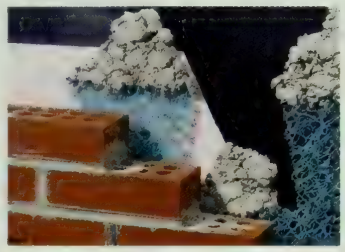
▼ Tough topping

Floric Polytech MT-200 Microtopping is a thin-section cementitious polymeric floor surfacing that is less moisture sensitive than conventional sheet and tile flooring systems and provides a wear-resistant finish for both interior and exterior surfaces. The topping can be applied over concrete, brick, metal, and masonry, and can be antiqued or chemically stained with Floris Polytech ChromaStain. 866/4-FLORIC. Floric Polytech, Rancho Cucamonga, Calif. **CIRCLE 228**



▼ Improving cavity wall drainage

After testing revealed straight-strip products inhibit air flow into and moisture flow out of weep holes, Mortar Net discontinued the company's Mortar Mitt straight-strip product.



The dovetail design of Mortar Net's standard product was found to be more effective for cavity wall drainage than straight strip. The testing also inspired Mortar Net to redesign its Weep Vent product to improve air flow. Weep Vents block insects and debris while allowing moisture to escape. Mortar Net, Gary, Ind. www.mortarnet.com **CIRCLE 229**

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Product Briefs



▲ Squaring off the line

Hansgrohe has launched a complete redesign of its Axor Steel collection of stainless-steel bath and kitchen faucets, shower products, and accessories. The streamlined new look combines the curves and circular shapes of the earlier version with new super-straight lines, flat surfaces, and square angles. Two new products in the line will now be available as well—an 8" widespread lavatory faucet and a wall-mounted model. Accessories include towel bars, towel rings, lotion dispenser, soap dish and tumbler, and a robe hook. Hansgrohe, Alpharetta, Ga. www.hansgrohe-usa.com **CIRCLE 230**



◄ Mobile monitor support

Media Mount Communicator and FreeWall Plasma monitor-support furniture each positions a slender, wide-screen plasma monitor on a movable vertical furniture stand. The products accommodate the audiovisual support and video teleconferencing needs of today's thin-profile plasma monitors, without being bound to one wall or to one room. Both models accommodate up to a 52" customer-supplied plasma monitor from LG, NEC, Panasonic, Pioneer, Sony, or other manufacturers. Vecta, Grand Prairie, Tex. www.vecta.com **CIRCLE 231**



◄ Bringing the kitchen to new heights

Bulthaup's new b3 kitchen concept is based on a wall system that allows cabinets and functional elements to be inserted directly into the architecture of the kitchen, moving even heavy appliances off of the floor and allowing them to hang "weightlessly" from the wall. The supporting wall can be attached to any stable substrate, including wood, concrete, or brick. A selection of interchangeable panels, available in laminate, lacquer, glass, anodized aluminum, bamboo, and other materials, are available in lengths up to approximately 9'. With b3, Bulthaup is the first to offer a 1/10"-thick stone worktop to the market. Bulthaup, Los Angeles. www.bulthaup.com **CIRCLE 232**

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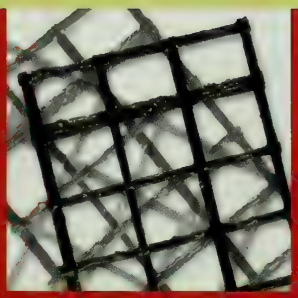
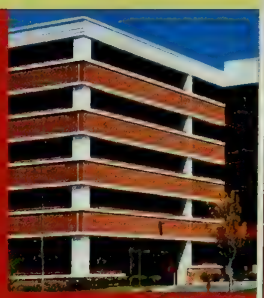
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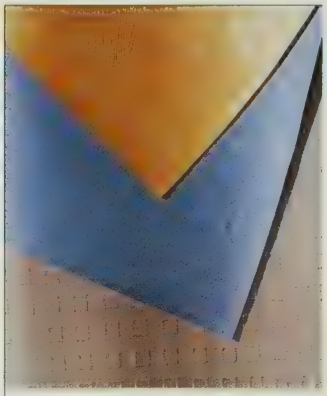
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◄ Easier to clean health-care seating

Thonet's CX seating line has been designed primarily for health-care facilities. The design, by John Caldwell, features rust-proof hardware to enable the chair to withstand steam cleaning and the only field-replaceable mesh and upholstered seat sling option that can be performed by in-house staff. The lightweight, polished-aluminum frame comes standard, and powder-coat options are available. The nonstackable version of the chair includes a knee-tilt mechanism option to aid circulation, and an integrated rear glide/caster to allow for ease of movement. The competitively priced design can be used in patient rooms and public seating applications. Thonet, St. Louis. www.thonet.com **CIRCLE 233**



▲ Haven from the status quo

Wolf-Gordon has released the Haven Collection, the second group of wall-coverings from its Haven binder for contract interiors. The collection, designed by Patty Madden, includes 18 printed patterns, ranging in style from natural shapes to geometrics and mosaics. More patterns will be added to the binder in the future, and all are type II, 21-ounce material with either a woven scrim textile or nonwoven backing. Wolf-Gordon, Long Island City, N.Y. www.wolf-gordon.com **CIRCLE 234**

▼ Another landmark job

Traco will manufacture more than 1,000 replacement windows for the 1902 Flatiron Building in New York City. The company will custom design TR-9000 heavy commercial AAMA-grade double-hung windows for the historic steel-frame tower. Traco's other landmark projects include the Empire State Building and the crown of the Statue of Liberty. Traco, Cranberry Township, Pa. www.traco.com **CIRCLE 235**



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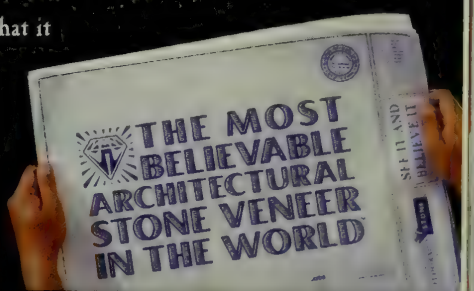


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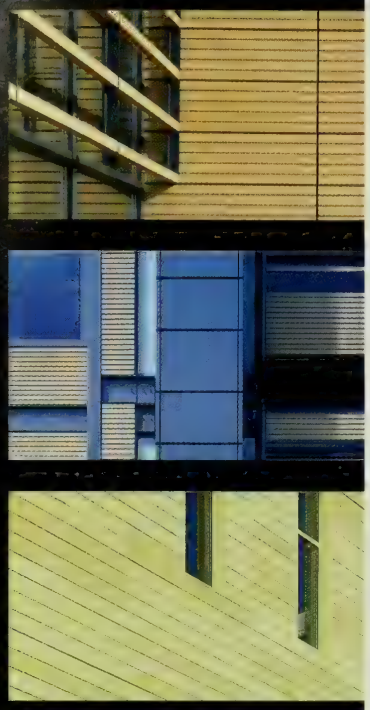


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Product Literature

Concrete color chart

The *Color Chart A-312.11 for Chromix Admixtures for Color-Conditioned Concrete* doubles the number of chips available in the previous color-card and hard-sample sets. More than 400 custom colors are available by special order. L.M. Scofield, Los Angeles.
www.scofield.com **CIRCLE 236**

Carpet color box

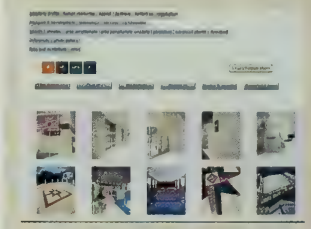
Milliken Hospitality Carpet interviewed designers before revamping its new Color Box, adding colors and organizing them by color family for ease of use. The carpet samples are magnetized for easy display on the companion magnetic clipboard. Milliken Carpet, LaGrange, Ga.
www.maxbymilliken.com **CIRCLE 237**

Plumbing product guides

A new full-color binder, titled the *Sloan Architectural Design Guide*, is now available from Sloan Valve. The guide offers the latest information on Sloan's water-conserving plumbing products and systems, details on system applications in a variety of markets, and applicable information on LEED. Descriptions, color photos, diagrams, and information on special finishes are provided for a range of water-saving plumbing systems, including electronic and manual flushometers and faucets, sinks, accessories, and Sloan's new waterfree urinals. Sloan has also introduced a 42-page specification catalog on the Polaris manual faucet line. The catalog contains specs and product information for more than 35 Sloan Polaris manual faucet models. Sloan Valve, Franklin Park, Ill.
www.sloanvalve.com **CIRCLE 238**

NEW SITES FOR CYBERSURFING

Revamped site for Italian ceramic tile.
www.improntaitalgraniti-usa.com



The latest issue of *Slate Roof Quarterly* is now available online.
www.slateroofquarterly.com

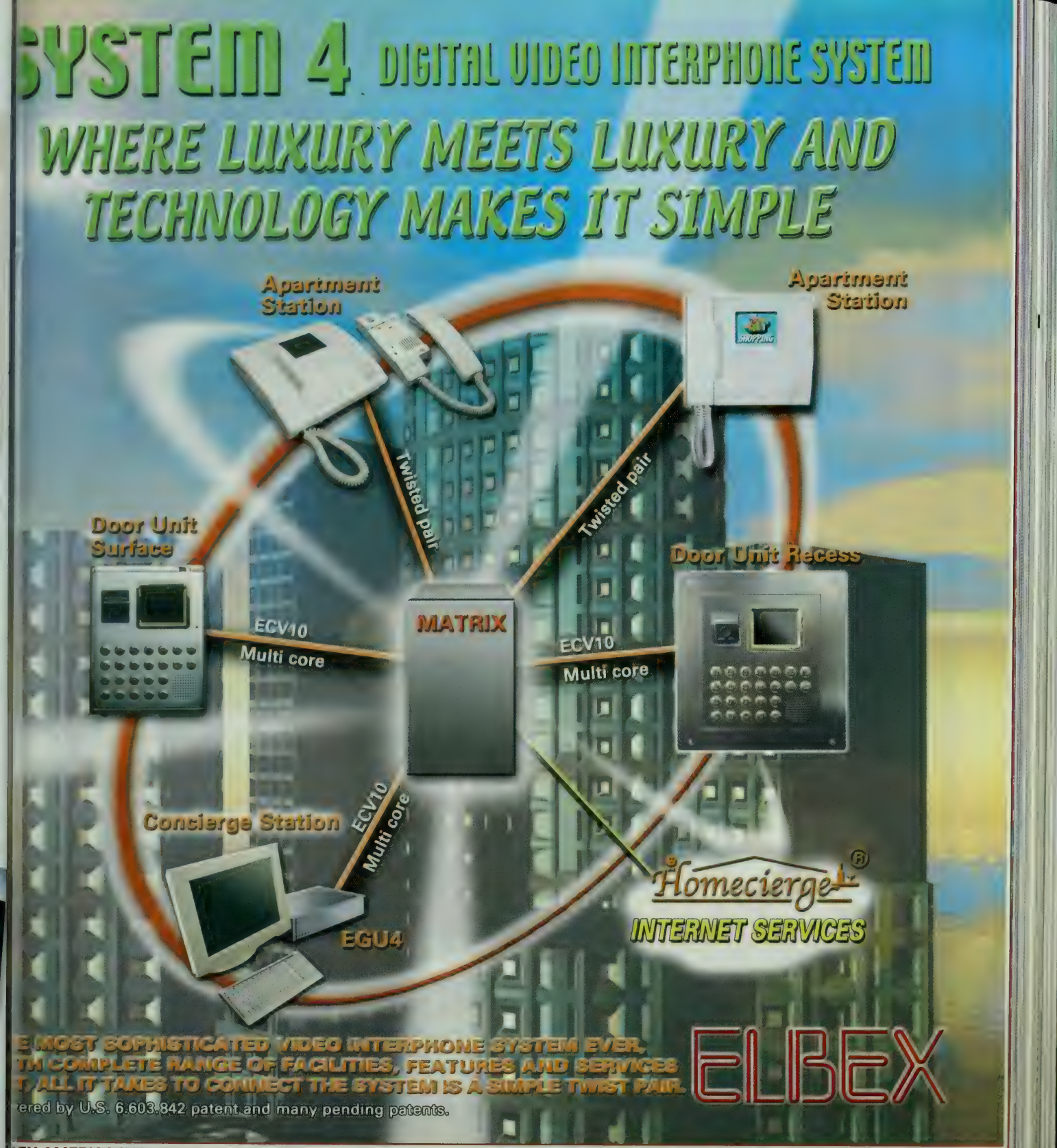
Redesigned Web site for the building-transportation industry. **www.neii.org**

Site designed to promote the use of Southern Pine in building applications.
www.southernpine.com





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Product Literature

Safety products brochure

The Bilco Company offers a new brochure on the Bil-Guard Hatch Railing System and LadderUP Safety Post architectural safety products. The brochure includes features and benefits, product specifications, model information, and application images. Bil-Guard is a fixed railing system that provides a permanent means of fall protection for hatch openings, while LadderUP Safety Post is an extensive device for fixed ladders, allowing workers safe entrance and egress from roof hatches, manholes, or floor, vault, and sidewalk doors. The Bilco Company, West Haven. www.bilco.com **CIRCLE 239**

Kitchen cabinet styles

Four diverse collections of kitchen cabinetry—International Style, Modern Classics, Traditional Designs, or Timeless Classics—are featured in *A Kitchen for Every Lifestyle,* a new brochure available from SieMatic. SieMatic America Group, Bensalem, Pa. www.siematic.com **CIRCLE 240**

Connectivity solutions

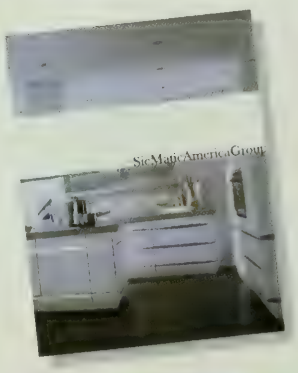
Vecta offers a new brochure detailing the Plug-n-Play collection of power and data connectivity solutions. The 16-page full-color brochure highlights Vecta's portfolio of modular and handwired connectivity solutions designed to meet today's intensive multimedia needs. Vecta, Grand Prairie, Tex. www.vecta.com **CIRCLE 241**

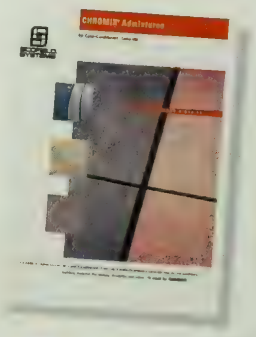
Cultured stone visualization

Owens Corning, the makers of Cultured Stone–brand stone veneer, has released an upgrade to its StoneCAD software. The software is the only veneer-stone visualization program to provide hatch patterns and texture maps of every color and texture in the product line. The program includes a photo gallery with hundreds of examples catalogued by usage and type of product. Owens Corning, Toledo. www.culturedstone.com **CIRCLE 242**

Lighting catalog supplement

In conjunction with its 20th anniversary and the introduction of hundreds of new designs, W.A.C. Lighting has unveiled a catalog supplement that features new QuickConnect pendants and fixtures, undercabinet lighting, and Beauty Spot accent luminaires. W.A.C. Lighting, Garden City, N.Y. www.waclighting.com **CIRCLE 243**









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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

Program title: **"Exotic Woods Gain Popularity In the U.S.," Architectural Record (11/04, page 223).** 114EDITX

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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Program title: **"Hardware, Hinges & Handles," a multi-sponsored section, (11/04, page 235)** **114SPONN**

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Program title: **"Northern hard maple flooring... the multipurpose surface," sponsored by MFMA, (11/04, page 251)** **114SPONJ**

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Program title: **"Insulation earns high scores in green projects," sponsored by Owens Corning, (11/04, page 257)** **114SPONK**

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Program title: **"Laminated glass with a Polyvinyl Butyral (PVB) interlayer: Keeping unwanted noise at bay," sponsored by Solutia Inc. and Arch Aluminum & Glass Co., Inc., (11/04, page 263)** **14SPONL**

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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

Program title: **"Performance override: Door specifications meet the 'real world'," sponsored by WDMA, (11/04, page 269)** **114SPONM**

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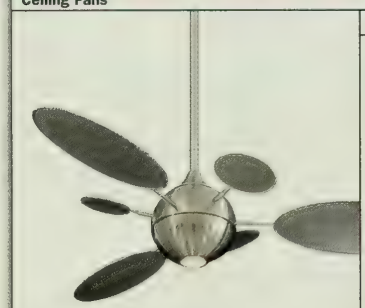
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Ledalite Architectural Products

Lighting Systems



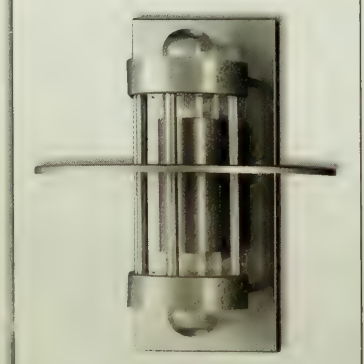
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Lighting Fixtures 800-940-6588



10 Specialties

The Helos family of lighting fixtures from Luraline Products Company features a classic industrial design, enhanced by extraordinary durability and energy efficiency that make it ideal for industrial and commercial applications. The series is offered in a coordinated collection of pendant, ceiling, wall, and post mount configurations. Helos is offered with a choice of incandescent or energy-efficient compact fluorescent or HID lamping. A full palette of painted and metallic finishes is available, as well as custom colors on request. Fixtures in the series are suitable for interior or exterior applications. Shown is the Helos wall mount in Faceted Silver finish. For more information, please call the company or visit the Web site.

www.luraline.com 152

Engineered Lighting Products

Compact Downlights 626-579-0943



16 Electrical

New "Hole in the Ceiling" Downlight These innovative fixtures utilize con pact fluorescent, incandescent, or met halide lamps. The GRG (fiberglass rei forced gypsum) casting has integr electrical components, which a accessible through the bottom of th fixture. Installed, it looks like a custo formed drywall light niche that blen with any interior motif. UL/CUL listed.

15

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Prima Lighting Corp.

Light Fixtures | 866-885-4915

16 Electrical



The Multi light fixture series gives you complete freedom and control over your light source with high-end, elegant, and intriguing style. Easily direct the light exactly where you want and tailor the power to your needs. Choose a nine, six, four, three, or two light configuration available as a wall (shown), pendant, floor, or table light. Chrome and matte silver finishes. Clean, architectural multipoint canopies are available for the pendants. Please visit Prima Lighting's Web site or call to find out more about its breakthrough OPUS line of contemporary architectural lighting.

www.primalighting.com | 156

Cherry Tree Design

Stock & Custom Doors | 800-634-3268

8 Doors & windows



Experience the artisan touch—sophisticated design, exceptional craftsmanship, natural warmth. Stock and Custom pocket doors, passage doors, room dividers, window coverings, closet doors—made in Shoji Style. Hardwood lighting and mirrors featuring contemporary, Arts & Crafts, and Asian styling. Hand-crafted in the USA using unsurpassed joinery, solid hardwoods, and beautiful durable facings. Perfect for commercial, hospitality, and residential projects. To learn more about Cherry Tree Design's complete product line, call their toll free number.

www.cherrytreedesign.com | 159

Primelite Manufacturing Corp.

Hanging Light Fixtures

16 Electrical



Globes available in glass, polyethylene, acrylic, and polycarbonate. Diameters from 6-in. to 36-in. Chain, cord, and stem suspensions are available in custom stem lengths to meet your specifications. Primelite also carries decorative outdoor fixtures. Sign and task lighting. Custom types of heads and arm bends are available in all aluminum parts. Indoor wall sconces and a wide selection of children's fixtures. Hanging prismatic fixtures available in 12-in., 19-in., 22-in., and 26-in. diameters, with or without cages. All fixtures can be made for incandescent, metal halide, high-pressure sodium, and PL bulbs. Metal parts are powdercoated; wide selection of colors to choose from. Fixtures can be designed to meet your specifications. Fax number 516-868-4609.

www.Primelite-MFG.com | 157

FAAC International, Inc.

Invisible Swing Gate Operators

2 Site construction



FAAC is the world's largest specialized manufacturer of hydraulic operators for swing, slide, and barrier gate systems. The Model 760 hydraulic swing gate operator is designed specifically for in-ground installation for residential applications. Its power, reliability, and invisibility make the 760 ideal for large ornate gates. For more information on the 760 and other FAAC products, visit the Web site.

www.faacusa.com | 160

EPIC Metals Corporation

Roof and Floor Deck Ceiling Systems | 877-696-3742

5 Metals



EPIC Metals Skydeck™ option was designed to incorporate natural lighting into structural, long-span roof deck ceiling systems without the need for additional steel framing. By featuring Solatube® technologies, the EPIC Skydeck option provides the brightest, cleanest, and whitest light possible while minimizing solar heat gain and glare. Skydeck supports green building philosophies by reducing the need for electrical lighting and conserving energy costs that contribute to LEED certification. Additionally, Skydeck can be specified with an acoustical option to reduce interior ambient noise levels, can span up to 55-ft., and has a variety of appearance options to complement any architectural design.

www.epicmetals.com | 158

Master Halco, Inc.

Decorative Wire Fencing

2 Site construction



New EuroScape™ 300 Decorative Wire fencing incorporates some of the best design elements of industry-leading ornamental iron and color chain-link. Its steel and wire mesh construction in a special twin wire design creates unique joint strength and durability. EuroScape 300 is available in four colors: tan, bronze, white, and black. Decorative wire fencing complements a variety of architectural styles and is backed by a 12-year limited warranty. With more than 60 locations across North America, Master Halco has the products and services to satisfy your project requirements. Visit the Web site to view extensive product offering and download specifications and drawings. (Black decorative wire fencing as seen in the 2003 Sunset Idea House.)

www.FenceOnline.com | 161

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DEX Studios

Terrazzo & Concrete | 404-753-0600



3 Concrete

DEX manufacturers precast architectural concrete and terrazzo products for commercial, multi-unit, and residential applications. Superior finishes and colors in both cast concrete and terrazzo are available in sinks, bathtubs, shower pans, tile, bar and countertops, tabletops, fireplaces, and tilt-up wall panels. All DEX products are pre-cast in a controlled environment, polished to a hard dense finish, and sealed to enhance depth and protect the finished product. Sample boards of 25 spectacular concrete colors and 10 standard terrazzo finishes available. DEX has a combined total of 50 designs and sizes of sinks, all standardized with several ADA compliant designs to make specifying them easy.

www.dexstudios.com | 162

Vermont Structural Slate Company

Slates, Quartzites, Sandstones & Limestones | 800-343-1900



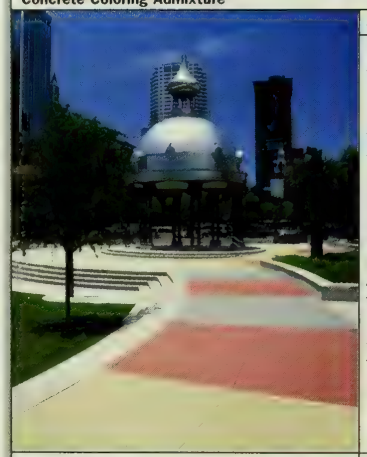
4 Masonry

For almost 150 years, Vermont Structural Slate Company has quarried and fabricated top-quality natural Vermont slates, producing all types of architectural, flooring, and roofing slate products. They complement their range of local materials with unique slates, quartzites, sandstones, and limestones from around the world. They specialize in architectural projects and can help architects evaluate, detail, and specify natural stone. Call them for their brochure and samples or visit the Web site.

www.vermontstructuralslate.com | 165

L. M. Scofield Company

Concrete Coloring Admixture | 800-800-9900



3 Concrete

CHROMIX® Admixtures for Color-Conditioned™ Concrete: Award-winning projects begin with award-winning materials. CHROMIX Admixtures for Color-Conditioned Concrete are colored, water-reducing, set-controlling admixtures for ready mixed architectural concrete. Coloring concrete integrally, they produce rich hardscapes and precast, tilt-up, or cast-in-place buildings of enduring beauty. CHROMIX Admixtures provide permanent, streak-free color conditioning and increased concrete strength at all ages. Call or email to request color cards and specifications. Email info@scofield.com.

www.scofield.com | 163

ATAS International, Inc.

PC Standing Seam Metal Roof System



5 Metals

ATAS International's PC Standing Seam Metal Roof System consists of two parts: the panel, and a choice of either a seam or batten strip that is snapped over the clips and fasteners, concealing the fastening system. The PC System panels are not structural panels and must be applied to a solid underlayment. ATAS International, Inc. Dutch Standing Seam is an architectural and structural standing seam panel with the UL 90 wind uplift rating. The panels are installed with concealed clips and fasteners and may be installed over solid substrate or directly over open framing. Dutch Seam has a PVDF or anodized finish.

www.atas.com | 166

Mortar Net USA, Ltd.

Masonry Accessories



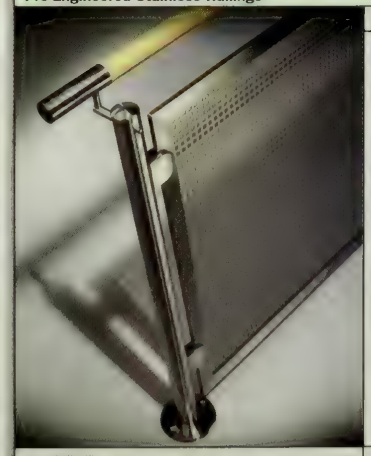
4 Masonry

Properly constructed cavity walls are the first step to ensure that your masonry home is dry and free from water damage and mold. During construction, mortar droppings can block weep holes, trapping water inside the cavity, creating long-term moisture problems. Mortar Net® Residential provides the solution for clogged weep holes by breaking up mortar on two levels allowing water to freely drain to the weeps. Mortar Net Residential's patented shape helps eliminate water problems to interior walls and prevents efflorescence and damage caused by freeze/thaw cycles. Used with Mortar Net Weep Vents, Mortar Net Residential forms a complete water drainage system.

www.mortarnet.com/ars | 164

HDI Railing Systems

Pre-Engineered Stainless Railings | 717-285-4088



5 Metals

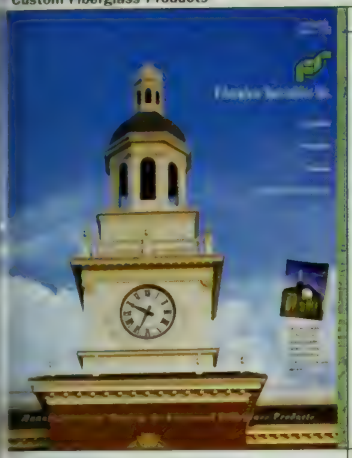
CIRCUM™ stainless railing system. Manufactured of corrosion-resistant stainless steel, CIRCUM is ideal for interior or exterior applications in commercial and residential facilities. Infill materials available in perforated stainless steel, tempered glass, and stainless steel rods. Handrails in wood/stainless, stainless, or colored nylon. Curved rails and custom designs are available. Complete supply and installation service is available throughout North America, which includes *inox*™. CIRCUM™, HEW Nylon, and d line™ railing systems. Email info@hdirailings.com.

www.hdirailings.com | 167

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Fiberglass Specialties, Inc.

Custom Fiberglass Products



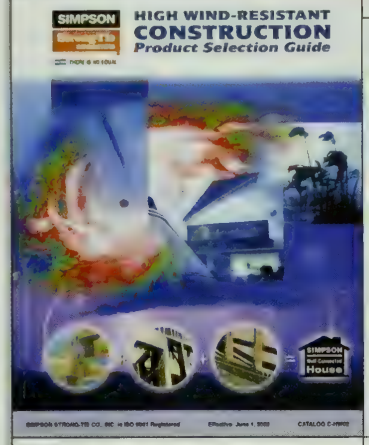
6 Wood & plastics

Fiberglass Specialties Inc. manufactures custom architectural products from FRP fiberglass. Custom products are often less than stick-built structures and arrive at the job site pre-ready to install. 2004 projects range from the replication of a 130-ft. historical lighthouse (with a full size cellular tower inside) to a custom cupola with a unique analog wind gage for a residential application. Each custom structure is designed around a tubular steel unitized body with architectural FRP panels affixed. Almost any size, shape, or texture can be replicated. Custom colors are available, and because they use low styrenge gel coats, yellowing, fading, and chalking are minimal. In-house architect (AIA) and design engineers are available.

www.fsiweb.com 168

Simpson Strong-Tie Co., Inc.

Wood Structural Connectors Guide



6 Wood & plastics

High Wind-Resistant Construction, a product selection guide for wood structural connectors, shows installation drawings, load tables, and fastener schedules for products appropriate for high wind areas. Truss bracing and girder/truss to masonry/concrete connectors are identified with drawings showing appropriate installation. The booklet contains updated loads on products to comply with IBC/2000 and ASCE 7-98 provisions relating to allowable increases for steel. Simpson Strong-Wall® shearwall information is included in this concise and useful guide. To view this guide, visit www.strongtie.com and click on literature/catalogs, then on connectors-specialty catalogs and scroll to the C-HW02.

www.strongtie.com 171

Melton Classics, Inc.

Architectural Products



6 Wood & plastics

Melton Classics provides the design professional with the most comprehensive selection of quality architectural products in the industry, including architectural columns, balustrades, moldings, cornices, and a wide array of architectural elements. Architectural columns are available plain or fluted, load-bearing or column covers, round or square in fiberglass, fiberglass/marble composite, synthetic stone, cast stone, GFRC, and wood for paint or stain. Melton Classics offers a maintenance free balustrade product ideal for any application. Balustrades are available in four durable materials: MarbleTex™ synthetic stone, poly/marble composite, cast stone, and polyurethane, and can meet any code or radius application.

www.meltonclassics.com 169

Polyglass

Tile Roofing Underlayment



7 Thermal & moisture protection

Polyglass offers Polystick TU Plus™, a high quality, skid resistant tile roofing underlayment that is formulated to withstand heat up to 260 degrees Fahrenheit. TU Plus is manufactured using patented ADESO™ technology, a "true" APP compound, glass fiber reinforced, with a high strength polyester fabric on the upper surface and aggressive self-adhesive compound on the bottom.

www.polyglass.com 172

Simpson Strong-Tie Co., Inc.

Shearwall Anchoring Systems 800-999-5099



6 Wood & plastics

For multistory commercial buildings or apartment houses, Simpson's ATS (anchor tiedown system) provides an improved method for anchoring shearwalls to resist uplift forces caused by earthquakes and high winds. The patented concentric holdown system integrates vertical load resisting hardware easily and economically into standard wood frame construction up to five stories high. Anchor tiedown system features high load capacity, fast installation, no horizontal drilling, and take-up of 1-in. of wood shrinkage and compression per floor. It can be installed allowing rod offset up to 1-3/4-in. maximum per floor. Code recognized by ICBO (ER-5090) and COLA (RR-25326).

www.strongtie.com 170

Artistic Doors & Windows

Fire-Rated Wooden Doors



8 Doors & windows

Artistic Doors and Windows is committed to providing full service for its customers. It now offers TRUE STILE & RAIL fire doors in ratings of 20-, 45-, 60-, and 90-min., at only 1-3/4-in. thick (patent pending). They include flat or raised, single or multiple panels and glass lites. The company is certified to 3-ft.-6-in. by 9-ft. for single swing and 7-ft. by 9-ft. for pairs, all with its own rated wooden jambs. Add in Artistic Doors and Windows' Exclusive Retaining Hardware and see what sets it apart from the competition.

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Technical Glass Products

Fire-Rated Steel Framing



8 Doors & windows

Technical Glass Products offers the Fireframes™ Curtainwall Series—fire-rated steel framing for large expanses of glass spanning multiple stories. Available for interior or exterior use, the Curtainwall Series carries fire ratings up to two hours. Custom exterior face caps allow a wide variety of appearances, including stainless steel. For more information visit the company's Web site.

www.fireglass.com — 174

Teragren LLC

Bamboo Flooring, Panels & Veneer — 800-929-6333



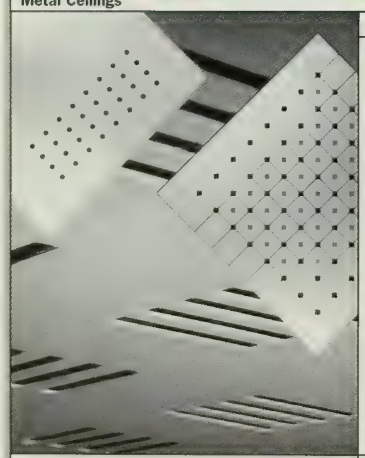
9 Finishes

Teragren manufactures beautiful, durable, renewable interior bamboo solid strip and wide plank flooring, stair components, panels and veneer. Featured in the Hyatt Maui, Timberland stores, Seattle Central Public Library, and other commercial and residential installations nationwide. 25% harder than oak and 2-1/2 times more stable than maple. Available in two grains and colors. Contributes to LEED™ as a rapidly renewable resource and low-emitting material. Coating materials water-based, solvent-free. 25-year residential and 5-year commercial finish warranties. Visit the company's Web site for more information. Contact Teragren for samples and/or brochure.

www.teragren.com — 177

Gage Corporation, Intl.

Metal Ceilings — 800-786-4243



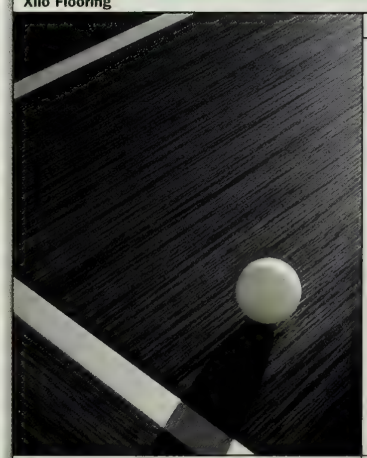
9 Finishes

The new standard for perforated metal ceilings. Gage introduces its new 700 series of perforated metal ceilings manufactured from 50% recycled aluminum. Standard designs include five distinctive finishes and 14 different perforation patterns. Selective and custom designs are also available. Contact the Gage factory for literature and samples.

www.gageceilings.com — 175

Viva Ceramica

Xilo Flooring



9 Finishes

Colors meet the purest clays forge and pre-compacted in a higher tha normal thickness (12mm). Complet penetration between body and colo grants lasting optical results, maximur ultimate tensile strength, and absolut resistance to acids, scratches, frost and dirt. This totally environmentall friendly manufacturing process i assured by ISO9001 quality system Certified plant of E milceramica i Fiorano Modenese; series XILO is guar anteed 20 years for private homes an 10 years for public areas. For furthe information please consult Viva fo updated price list and sales conditions

www.cerviva.it — 178

L. M. Scofield Company

Concrete & Cementitious Flooring — 800-800-9900



9 Finishes

Stylish Scofield flooring systems: For beauty and durability, concrete and cementitious toppings provide stylish flooring for high traffic areas in offices, lobbies, public spaces, food service, and retail areas. Scofield Systems offer diverse choices—ranging from monochromatic toppings to translucent, antique stains for faux finishes and dramatic graphics. Email info@scofield.com.

www.scofield.com — 176

Custom Home Accessories, Inc.

Decorative Cluster Mailboxes



10 Specialties

Tired of the same old ugly gang styl mailboxes? Give your community som "curb appeal" with the new Regenc decorative cluster mailbox unit. Con structed of cast aluminum and stainles steel, the elegant mail center i designed to last. Existing CBU's ca also be easily converted to a Regency This system comes in a variety of styles colors, and configurations. Custon Home Accessories, Inc. offers a full lin of mailboxes, address plaques, bronz markers, and street signs.

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New Holland Church Furniture

Curved Church Pews | 800-220-1465

12 Furnishings



Curved pews are "Round For A Reason"™ and are designed and manufactured by New Holland Church Furniture. Curved pews are designed for maximum seating, curved for efficient use of space, designed to enhance worship, created for community, uniting the family of God. New Holland Church Furniture is a certified member of the Architectural Woodwork Institute (AWI), so you can be assured of the very highest quality. Email nhcw@newhollandwood.com.

www.newhollandwood.com | 180

FabriTec Structures

Tensile Fabric Structures | 866-275-9710

13 Special construction



FabriTec Structures introduces a new generation of tensile fabric technology. Its highly specialized fabric structures utilize the most advanced architectural materials available and are non-combustible, both thermal- and UV-resistant, and can offer full weather protection. With virtually unlimited design options and applications, FabriTec's products are both practical and often visually spectacular. Designers can choose fabrics from a wide range of color and translucency and enjoy a cost effective and "fast-track" alternative to conventional building systems. FabriTec Structures provides clients with complete design/build services, including concept development, engineering, fabrication, project management, and installation.

www.fabritecstructures.com | 183

Finlandia Sauna Products, Inc.

Precut Saunas | 800-354-3342

13 Special construction



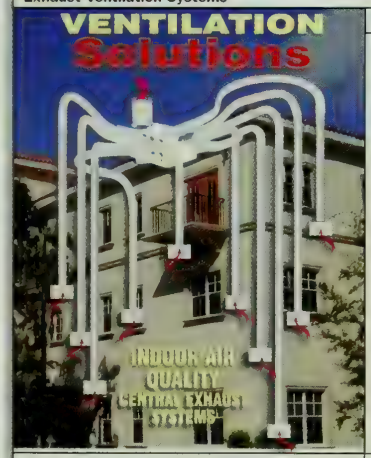
Finlandia Sauna has manufactured exclusive and authentic saunas since 1964. Finlandia offers precut sauna packages and modular sauna rooms as affordable luxuries that can be included in any remodel or new construction. The company markets four all-clear western softwoods and is the only manufacturer to use 1-in. by 4-in. paneling, instead of the cheaper 1/2-in. by 4-in. material used by others. Finlandia's packages include all room parts, a choice of a Finnish-made electric heater, a prehung door with choice of glass, and all necessary accessories. Finlandia's exciting new heater, the EverReady, is an excellent option for the person always on the go. Fax number 503-684-1120. Email info@finlandiasauna.com.

www.finlandiasauna.com | 181

American Aldes Ventilation Corp.

Exhaust Ventilation Systems | 800-255-7749

15 Mechanical



American ALDES manufactures central bath and IAQ exhaust ventilation systems for multifamily housing. Similar to the popular ALDES single-family systems, the energy efficient MPV multiport ventilators prevent mold growth caused by activity based indoor humidity levels. The silent and low continuous background ventilation rates are controlled by the MPV Multi's self-regulating air duct system. This guarantees precise IAQ control and energy efficiency for the owner. Installers appreciate the pre-calibrated and self-balancing feature of the MPV system, which saves hours of installation time. Available in many sizes for a variety of applications, a single MPV is capable of ventilating up to 16 bathrooms with a single fan and penetration to the outside.

www.americanaldes.com | 184

Rocky Mountain Hardware

Card Key Locking Systems

13 Special construction



Rocky Mountain Hardware introduces a unique line of architectural hardware for card key locking systems. Created specifically to meet the needs of boutique hotels and upscale resorts, this new collection is the industry's first hotel locking solution to combine the advanced security features of an electronic locking system with the aesthetic beauty and flexibility of bronze escutcheons and handles. The line features a choice of five standard escutcheon styles that can be combined with one of 28 levers, thus allowing property designers to create their own combinations that blend perfectly with the hotel décor. Custom designs are also available.

www.rockymountainhardware.com | 182

Concealite Life Safety Products

Security Alarms | 507-825-2907

16 Electrical



Concealite has applied its egress lighting technology to a new product line for the security industry. Secure-Alarm provides a convenient and immediate method to alert critical executives and security personnel of a breach in the facility's secure environment. Upon activation by security personnel, Secure-Alarm will rotate 180° and begin flashing. The flashing strobe can be mounted in the walls or ceiling of rooms or hallways and is only visible upon activation by security personnel. For more information contact Concealite Life Safety Products.

www.concealite.com | 185

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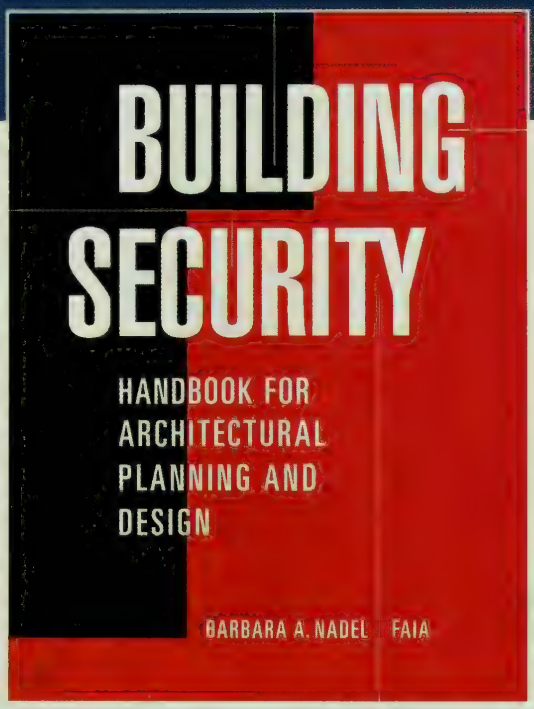
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Barbara A. Nadel, FAIA



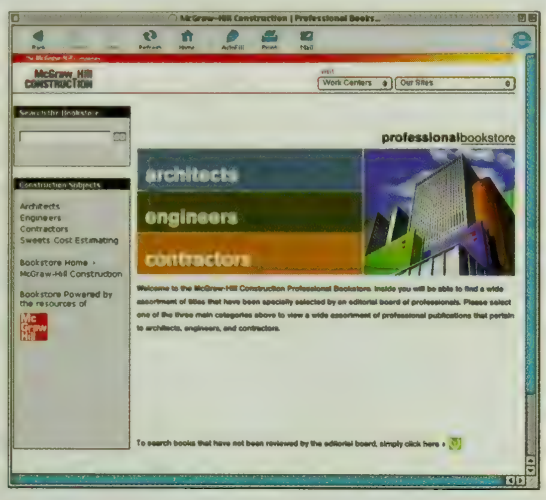
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FACULTY POSITIONS

DEPARTMENT OF ARCHITECTURE
BALL STATE UNIVERSITY
Muncie, Indiana

The Department of Architecture is seeking highly qualified candidates for two tenure-track positions at the rank of assistant or associate professor and one contract position, all available August 19, 2005. These positions will contribute to the Department's transition from an accredited Bachelor of Architecture to the new Master of Architecture (M.Arch.I) professional degree program.

Tenure-Track. Architectural Design + Digital Media. Primary responsibilities: teaching introductory and advanced design, digital media, and fabrication courses, including providing assistance with developing student use of digital fabrication laboratory. **Minimum qualifications:** terminal degree in architecture or a related field; substantial experience with a wide range of 2D, 3D, rendering, CAM, animation, motion graphics, and web design software. **Preferred qualifications:** advanced degree, professional registration and/or significant experience in teaching, architectural design and/or specialized area of expertise.

Tenure-Track. Architectural Design + Systems Technology and Sustainability. Primary responsibilities: teaching beginning and advanced technical courses in architectural technology from a theoretical and practical perspective. **Minimum qualifications:** terminal degree in architecture or a related field; ability to integrate the information from the technical courses with related design studios. **Preferred qualifications:** advanced degree, professional registration and/or significant experience in teaching, architectural design and/or specialized area of expertise; knowledge of environmental control systems based on sustainability principles.

Contract. Architectural Design +. Primary responsibilities: teaching design at all levels of the graduate and undergraduate programs. Additional interests in any of the following areas would meet department needs and/or strategic priorities—digital technology, representation, architectural theory and methods, environmental systems and/or reflective practice. **Minimum qualifications:** terminal degree in architecture or a related field. **Preferred qualifications:** an advanced degree, professional registration and/or significant experience in teaching, architectural design and/or specialized area of expertise.

The Department of Architecture resides in the College of Architecture and Planning along with Landscape Architecture and Urban Planning. With the Department are housed a first professional architecture degree program, a post professional program, and a program in historic preservation. In the college are three research and outreach units: Buildings Futures Institute, Land Design Institute, and Community Based Projects. Affiliated with the College is the Center for Energy Research, Education, and Service, which maintains close programmatic links with the Department. Also, the College maintains an active community based outreach center in downtown Indianapolis.

Send letter of application describing recent academic and professional accomplishments and experience as well as specifying position of interest, curriculum vitae, names and contact information for at least three academic/professional references, and select examples of scholarly and/or creative work to:

Professor Andrea Swartz
Faculty Search Committee
Department of Architecture
Ball State University
Muncie, IN 47306.
Tel: 765.285.1900; Email: aswartz@bsu.edu

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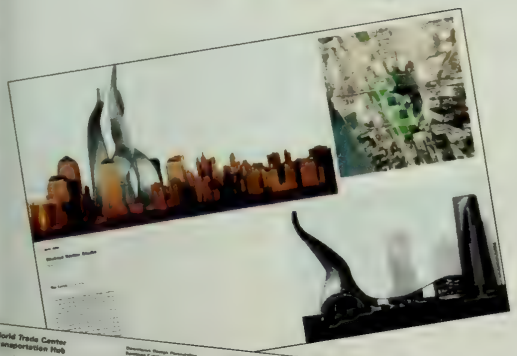
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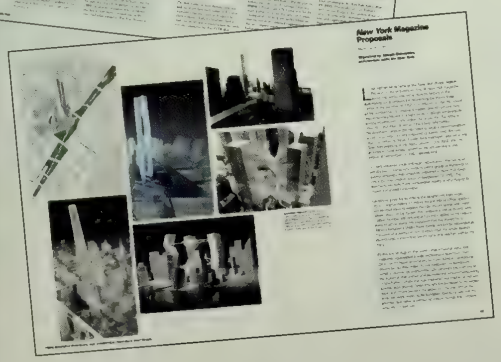
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S.J. Rozan: From job meetings came crime-novel characters

Interviewed by James S. Russell, AIA

Over 15 years, S.J. Rozan moved from the practice of architecture to growing success as a crime novelist. She's published eight books in her award-winning series featuring private investigators Lydia Chin and Bill Smith. Her last, Winter and Night, *won the Shamus Award and the crime-novelist's Oscar, the Edgar, for best novel. With the publication of her latest and much more tragic book,* Absent Friends, *she has been able at last to do what all novelists want to do: leave her "day job" at Stein White Nelligan Architects, in Manhattan, to write full-time.*

Q: *Why did you leave the practice of architecture?* I loved what I was doing, but I loved writing fiction more. My office was very supportive of my writing all along, especially Carl Stein. They never demanded that I choose one over the other.

You ran a large, long-running project for the firm. Shepard Hall, at the City University of New York in Harlem [background at left]. It's a huge building covered in what looks like Oxford Cambridge limestone, but which is really terra-cotta that has been failing. The legislature has been funding the gradual replacement of the ornament with GFRC [glass fiber reinforced concrete]. I have been on the job since 1994.

Tell us about your earlier books. The series features a pair of private investigators. Lydia Chin is a 28-year-old Chinese-American who lives with her mother. Bill is the quintessential white-guy private eye. I alternate their voices book by book. Her installments are Chinese-culture related, and his are much darker—they touch on the darker side of American culture, really.

Have you derived characters or situations from practice? The entire situation of *Concourse* came from a client who worked for a nonprofit. He once listed all the scams he knew of or had heard of. I had never thought about how many ways there are to steal from a nonprofit. Characters? I discovered in construction meetings that everyone dresses their character. The way people revealed themselves was really eye-opening. I used that.

Why do few architects appear in your books? Drama is hard to come by in what architects do. However important, it's not like law and medicine, where you have to do something now that affects life and death.

Tell us about your new book. *Absent Friends* is a crime novel, but it's not a mystery. I set it in New York right after 9/11. There's a crime at the heart and an unexplained death in the beginning, and the theme is what the nature of those two things are.

I was struck that you use firefighters as characters to touch on what heroism means. It is risky, because firefighters are so lionized. If you suggest that they may have feet of clay, people get very very upset. I wanted to write about average less-than-perfect people acting heroic every day—that's what firefighters do. That's impressive to me.

How did you use 9/11 in your book? One of the things I wanted to do was to record what it was like in New York right then. It was not like a city at war, not really like a city after a natural disaster. It was completely new. The sense of dislocation and fear and resolve and kindheartedness all needed to be put on paper. And that's what I tried to do in content and in the form, which is disjointed and complex. Because that's how every day was. It was how we felt.

Photograph by Andrew French

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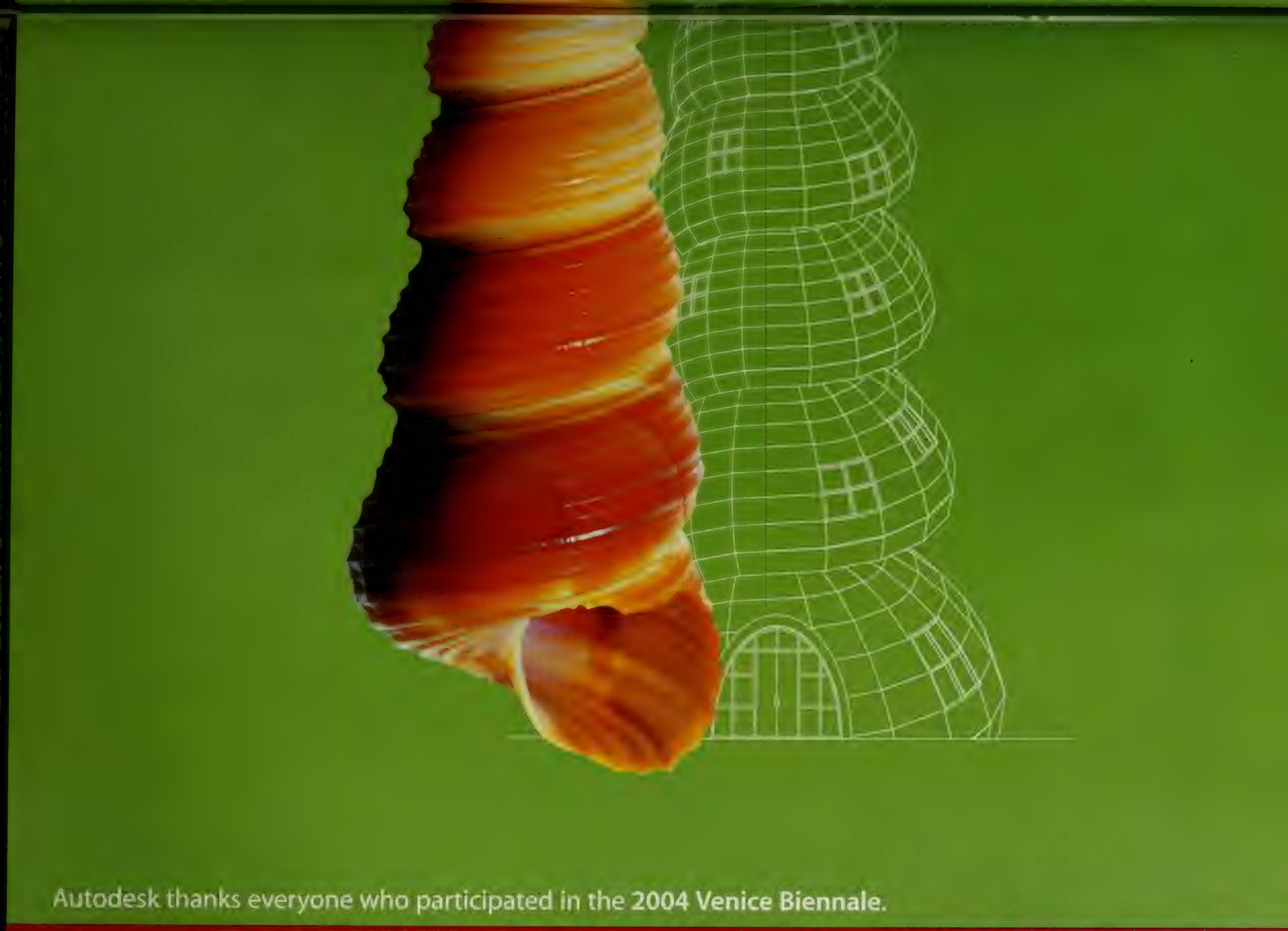


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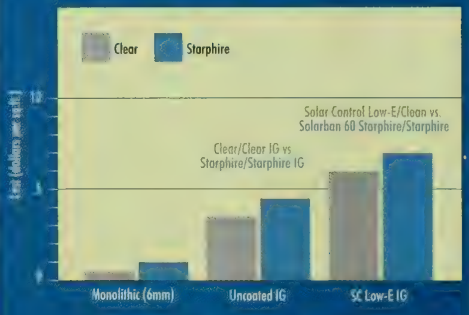
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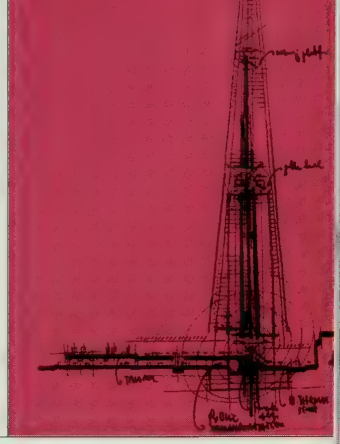
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ARCHITECTURAL RECORD
INNOVATION

NOVEMBER 2004

On the Cover: *Renzo Piano's London Bridge Tower combines apartments, a hotel, offices, and retail shops in a tower that rises from a large base into a razor-sharp spire that recalls the city's church steeples. The 66-story, double-glazed high-rise sits adjacent to a major rail station on the former site of the Southwark Towers. It will be completed in 2009. Image courtesy Renzo Piano Building Workshop.*



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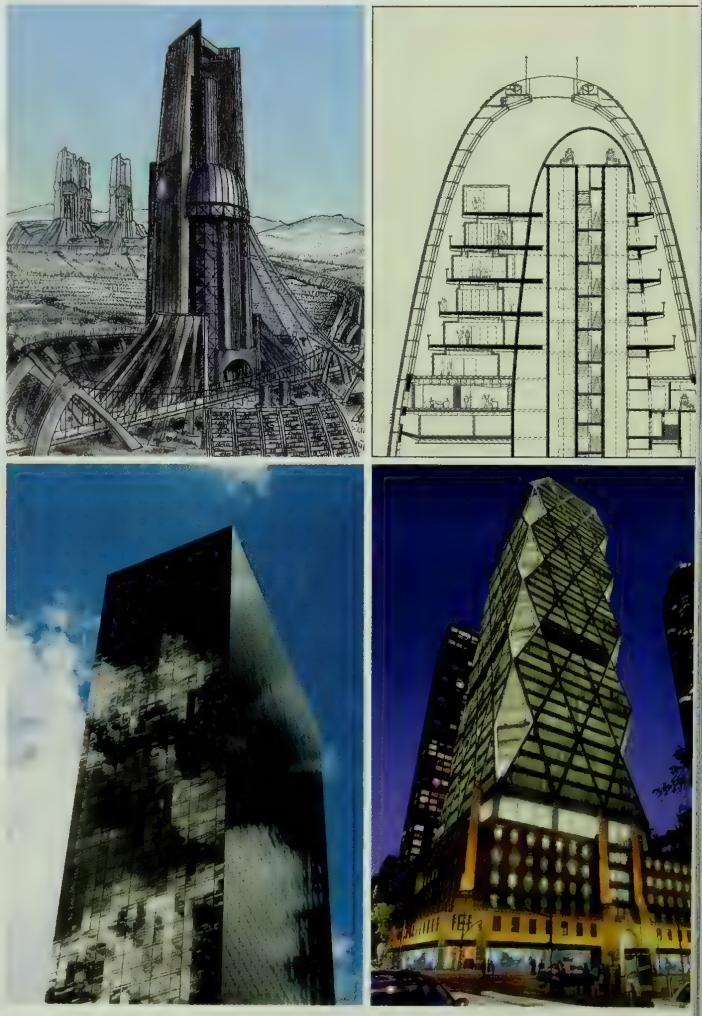
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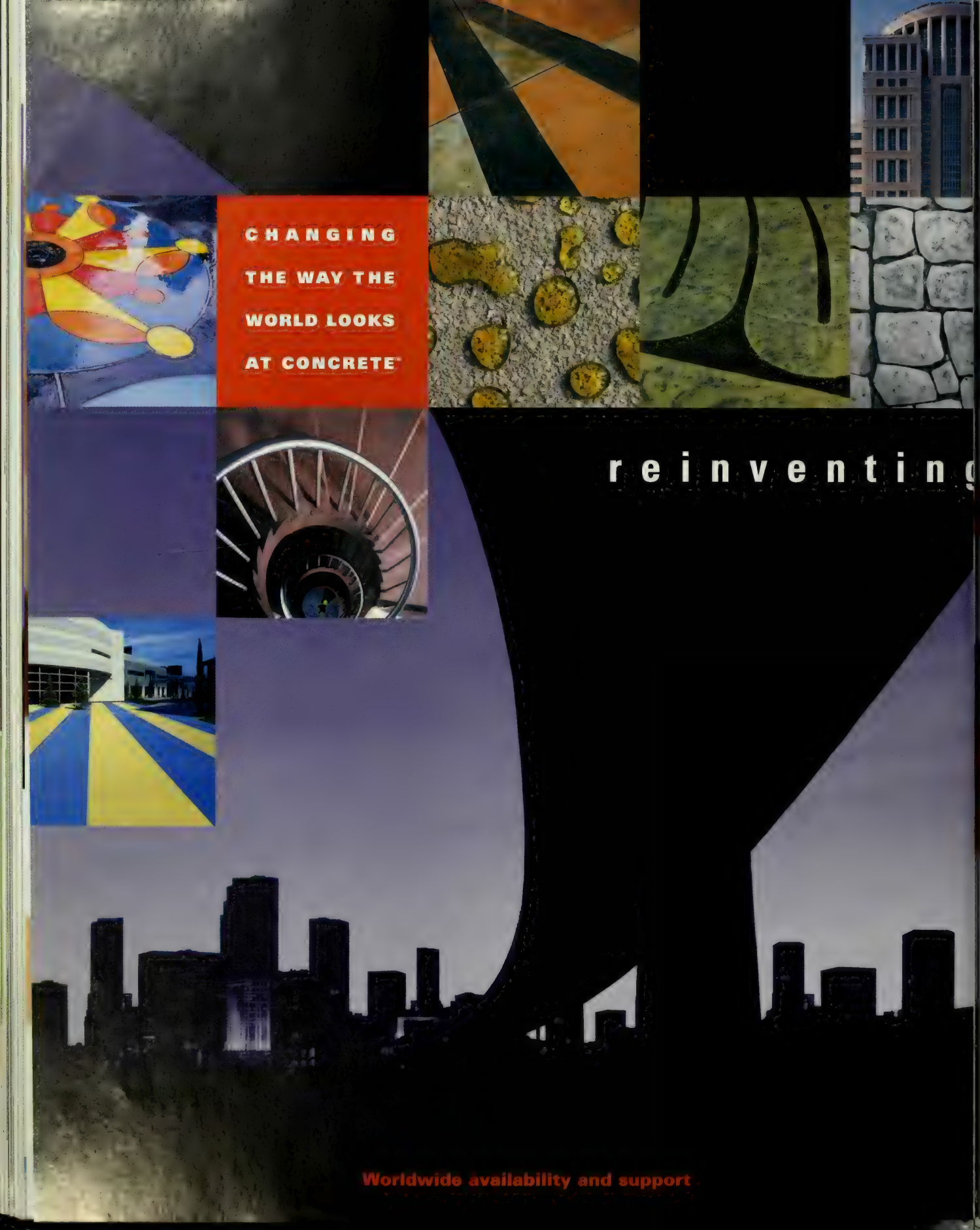
68 Product resources *by Rita Catinella*



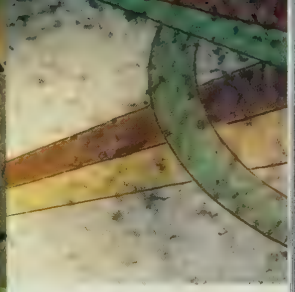
Above (clockwise from top left): *Paolo Soleri's proposed Hyper Building, image courtesy the Cosanti Foundation; the Agbar Tower, image by Jean Nouvel; the Hearst Tower, image by Foster and Partners; Trump World Tower, photographed by Jeff Goldberg/ESTO.*

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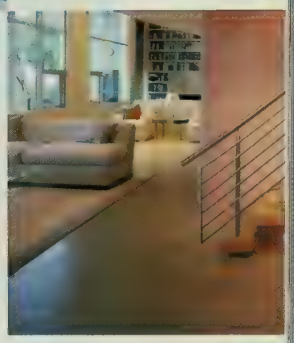
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Editorial

By Robert Ivy, FAIA

For architects interested in advancing the practice, the tall building serves as a kind of natural laboratory. Although few of us will actually design such a structure, the lessons forged in the intense demands of concentrated high-rise building design, where small decisions are multiplied floor by floor, can nevertheless inform our own decisions and lead all of us to creative choices.

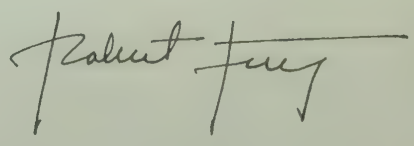
Such was the case for Foster and Partners' new Swiss Re building called 30 St. Mary Axe in London's financial district. This client-occupied structure, around the corner from the landmark Lloyd's of London, serves as headquarters for a major insurance and financial company. Its owner asked the architect to consider maintenance and comfort issues over a long lifetime of occupancy.

Foster's office created an instantly recognizable landmark (the bulletlike "gherkin") that announces itself on a venerable skyline. Its signature shape has encouraged Londoners to know and grow fond of it. Its ideas, however, go far beyond appearance, for the structure represents a holistic approach to design. Incorporated in its dual-glazed skin is an engineering philosophy that responds effectively to physical laws, particularly convection.

Throughout, the building was conceived on the premise that heat rises, and that solar gain can be translated into power, heat, and light for the interior. The notion seems simple enough. Sunlight warms the air bound within transparent cavity walls; the air then rises and is captured by mechanical systems that convert its energy to useful purposes. An array of individual conversion and delivery systems housed in interstitial space between floors allows pinpoint accuracy of heat and cooling for occupants.

Computer power lends brainpower to dumb walls. With an orchestrated system of sensors, glazing around the building opens and closes automatically depending on wind velocity, height, and direction. Such natural ventilation might not work elsewhere: England's benign climate encourages periods of natural ventilation. Nevertheless, the systems propose a remarkable ability to "tune" building envelope and form to accommodate nature's fickle whims.

Few of us will receive a commission like Lord Foster's. Yet his work on this landmark project can inform our own designs, permitting us to offer clients and the public buildings that are literally smarter, more productive places.



Tall building capitals still scrape the sky

By Sam Lubell

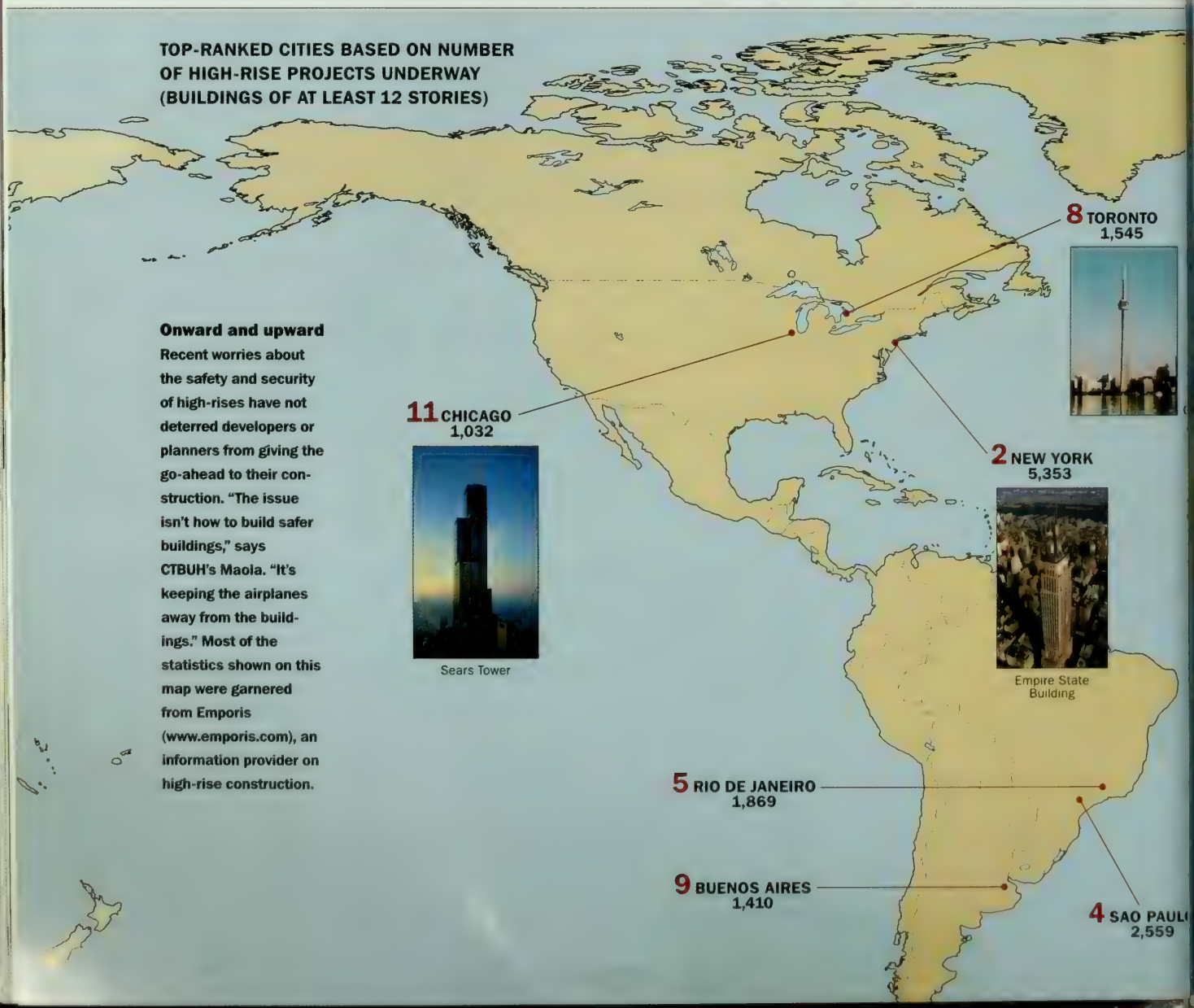
The tall building is alive and well in these vertical cities, which boast the most high-rises (buildings of at least 12 stories) in the world. Many also lead in new construction, led by Sao Paolo, Brazil, with 638 skyscrapers underway. The buildings, notes David Maola, executive director of the Council on Tall Buildings and Urban Habitat (CTBUH), present advantages when floorspace is at a premium, but are not always economically beneficial. Once they reach about 70 stories, their elevators begin to eat up floor space. Even so, they're symbolically important. "It's a very visible sign of economic prowess," he says. Hence, cities and regions continue to build higher. Asia, now the most active continent for skyscraper construction, boasts the three tallest towers: Taipei 101 in Taiwan, and Petronas Towers 1 and 2 in Kuala Lumpur, Malaysia. Two Asian projects by KPF, 111-story Kowloon Station Tower in Hong Kong and the 95-story Shanghai World Financial Center, will soon join the ranks of the highest.

Hong Kong, China

Though other cities are catching up, Hong Kong remains the skyscraper capital of the world, with by far the most completed skyscrapers. While most of the city's towers are located in the stunningly dense Kowloon business district, the majority of recent growth has taken place within the new territories, a large swath of land and islands on the northern side of the city's Victoria Harbor, skirting the Chinese mainland. The city has 7,259 completed skyscrapers, 280 under construction, 131 approved, and 35 proposed. Probably the most well-known of these is I.M. Pei's 1,204-foot Bank of China Tower, completed in 1990 and dominated by angular changes in geometry, silver reflective glass, and anodized steel panels.

New York, USA

The Big Apple is home to many of the world's first skyscrapers, like the Woolworth Building, and to some of



the best-loved, like the Empire State and Chrysler Buildings. Despite the tragic loss of the Twin Towers, New York continues to be a high-rise capital. The city has 5,353 completed skyscrapers, 67 under construction, 13 approved and 37 proposed. The biggest growth is in midtown Manhattan, where new skyscrapers include the Condé Nast building, the Reuters Building, the Westin Hotel, and the recently completed Time Warner Center. Buildings in development include the 1,776-foot Freedom Tower, the 945-foot Bank of America Tower, the 596-foot Hearst Tower, and the 52-story New York Times Building (see feature story, page 42).

Singapore

While Singapore's land mass totals only 650 square miles, its eponymous capital is home to 3,500 high-rises, with 244 more under construction, 45 approved, and 12 proposed. Three buildings—Republic Plaza, UOB Plaza One, and OUB Centre—stand at the country's highest allowed height of 920 feet. All are located in the densely-populated downtown core, which houses 165 completed buildings.

Sao Paolo, Brazil

Brazil's most populous city, with over 18 million residents, has seen vertical building for most of the 20th century. The city has 2,559 completed skyscrapers, with 638 under construction. Fifty-one more have been approved and eight are in the proposal phase. The city's density often leads to intense traffic, prompting a surge in the use of helicopters as alternative transportation. The city has a fleet of almost 500 choppers, second only to Tokyo.

Istanbul, Turkey

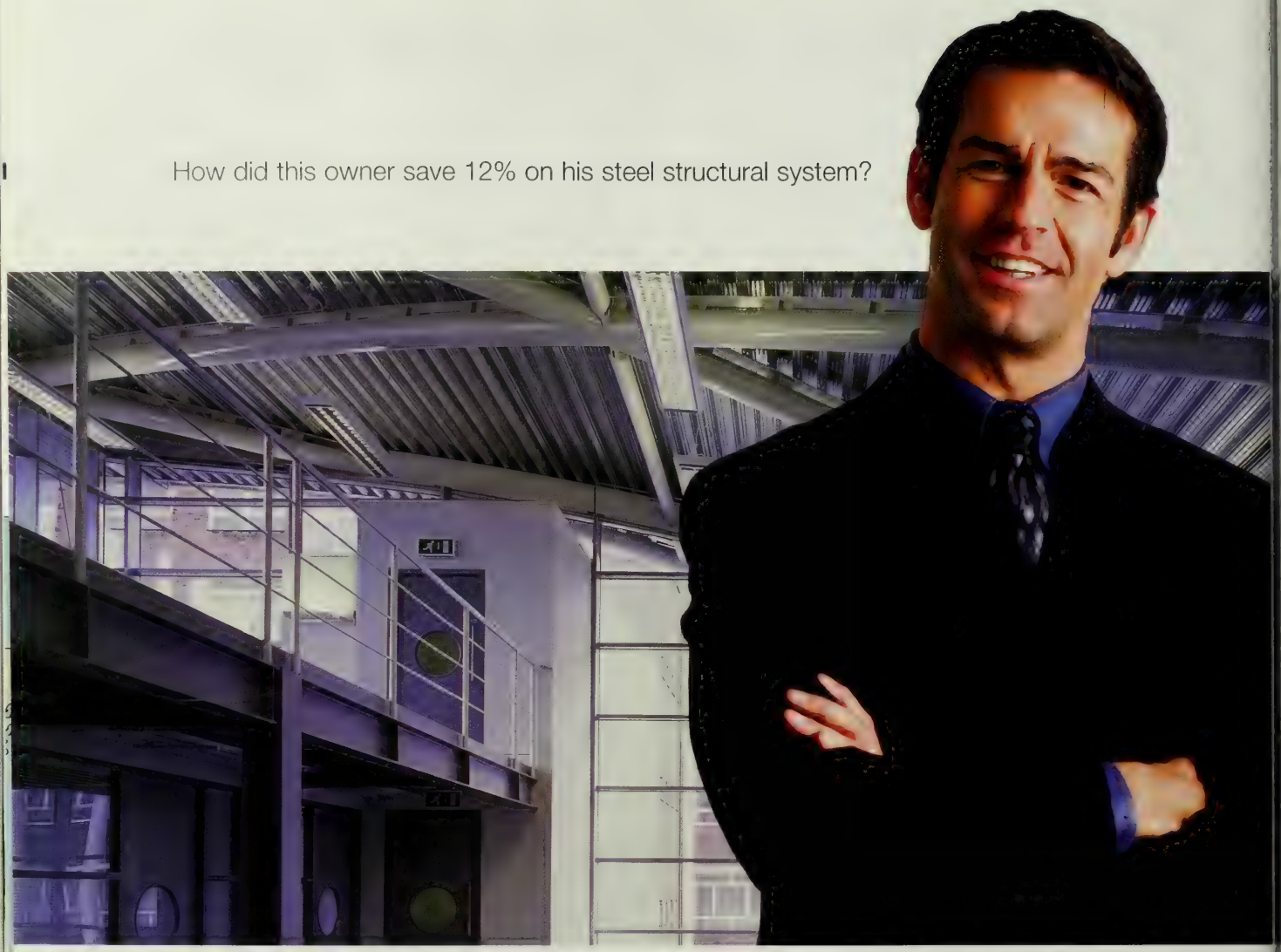
Istanbul's height isn't known by many, but its "skyscraper district" is impressive for its verticality, if not architectural design. Although none of its skyscrapers stand at the heights of the four cities that precede it, the city is host to some 2,092 towers, with 65 more skyscrapers under construction, 30 approved, and 20 proposed. Two towers, the Sun Plaza (476 feet) and Sisli Plaza (656 feet), are scheduled for completion at the end of 2004.

Future Capitals

The most notable capitals on the horizon include Shanghai, leading the way in construction-crazy China; Dubai, with monster buildings like SOM's Burj-al-Arab, part of the city's strategy to promote its dynamism and modernity through building; and London, which is seeing a flurry of construction like Renzo Piano's 1,016-foot London Bridge Tower and Richard Rogers's 736-foot 122 Leadenhall Street, thanks to government initiatives that encourage density.



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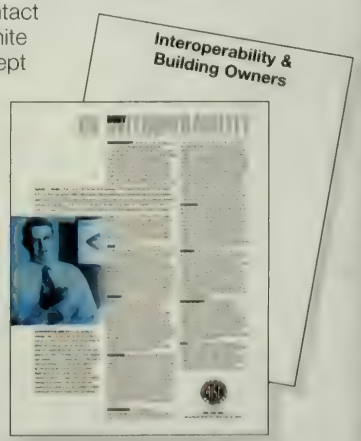
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Engineers find new ways to quake-proof high-rises

By Deborah Snoonian, P.E.

For decades, engineers working in earthquake-prone areas have focused on designing buildings that protect human life—and rightly so. But quake damage is costly and time-consuming to fix, and when structural steel yields or floor slabs crack as reinforcing steel absorbs a quake's energy, repairs are usually needed to make buildings safe again. Recent research and breakthroughs in earthquake engineering hold promise for safeguarding occupants while also minimizing damage to structures themselves.

Last spring, the A/E firm Skidmore, Owings & Merrill (SOM) was awarded a rare patent for a building technology—a new type of joint system for structures needing seismic protection. Termed the pin-fuse joint, it was designed by Mark Sarkisian, a structural engineering partner with the firm.

The joint acts like a typical rigid connection under most loading conditions, like strong winds or earthquakes of moderate intensity. But when a strong seismic event occurs and the building frame begins to bend, two plates on the back end of the joint are designed to slip relative to one another. This movement "softens" the frame so that the building receives less force from the ground, allowing the frame to deform safely without yielding. The slipping action and softening of the structure is equivalent to a gymnast's bending her knees when she lands from a dismount, which prevents injuries from landing forces. When the quake is over, the pin-fuse joint reassumes its usual position, much like a ball-and-socket joint in the body "pops" back into place.

SOM says the joint, which is made of brass and steel, has application in steel-framed and reinforced-concrete buildings as well as hybrids. Though it could be used in structures of any height, it offers particular benefits to tall buildings because it provides a combination of flexibility and stiffness (most high-rises are designed with welded or bolted connections, which offer the latter but not the former). Flexibility allows the structure to dissipate the energy of earthquakes, while stiffness keeps tall buildings from deforming catastrophically or toppling over when subjected to strong lateral forces.

The pin-fuse joint also has potential implications for structural design. It would allow steel-framed buildings to be erected with smaller members, meaning lighter structures and lower construction costs.

SOM has not yet used pin-fuse joints in any of its high-rises, but the firm is working with a leading university to test their performance under a variety of structural and seismic conditions. "We want to make sure we've got sufficient data so that we can enable the approvals we'll need on future projects," says Sarkisian.

A shift in perspective

SOM's patent points up a larger shift in seismic design, from structures engineered to prevent collapse but allow damage to those that can dissipate or suppress a quake's violent motions with no damage sustained. Two technologies used for this purpose include dampers and base isolation devices. Dampers, which can be installed at various locations on a high-rise structure, are piston-like devices that act as enormous shock absorbers, cushioning the frame from an earthquake's punishing blows. Base isolation devices, installed between a building's foundation and its frame, prevent ground forces from being transferred to the building. Isolation isn't usually feasible for buildings much over 10 stories, however, as uplift and tension forces created at the base threaten to topple high-rises during seismic events. One company, Earthquake Protection Systems (EPS) of Vallejo, California, has recently pioneered an isolation device capable of withstanding both tension and compression forces (most carry only the latter). Victor Zayas, EPS's president, says the company has recently implemented the bearings in a 160-foot church bell tower, and is currently designing them for use in high-rises.



SOM's patented pin-fuse joint allows building frames to flex safely without yielding during earthquakes.

Throughout the 1990s, as Japan increased its stock of skyscrapers, the country became a world leader in pioneering seismic and wind protection strategies. Buildings like the 972-foot Yokohama Landmark Tower use active damping systems that measure vibration in a building during an earthquake, using sensors that feed computers capable of adjust the damping weights accordingly. But lately the U.S. has begun investing more in seismic design technologies, says Michael C. Constantinou, chair of the civil, structural, and environmental engineering program at the University at Buffalo and director of the school's George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) Facility. The center is the largest of a network of 15 seismic research programs funded by the National Science Foundation. A recent $21 million upgrade enabled the construction of two state-of-the art shake tables with a combined capacity of 100 tons, where engineers can test models of buildings and bridges for seismic performance.

Like any advances in building, changes will take place incrementally. "We can improve design simply by continuing to build on what we know," says Sarkisian. ■



Earthquake Protection Systems is developing a new type of seismic isolation device that can withstand both tension and compression forces.

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No tall tales here: RECORD staffers pick their favorite reads about high-rises

By Charles Linn, FAIA

A colleague's enthusiastic recommendation of Jim Rasenberger's new book, *High Steel*, prompted a momentarily terse discussion among a few editors as we hashed out what, in our opinion, are the best books about tall buildings. What makes a good book on this subject? Heroic (or eccentric) personalities, money, and of course, the characters that interest us most, great buildings.

There are some surprises here: one or two of these are not purely architecture books, and at least one of our favorites had been pulled from a shelf of remaindered titles at Barnes & Noble. Here are our picks.

High Steel: The Daring Men Who Built the World's Greatest Skyline, Jim Rasenberger, New York: Harper Collins, 2004, 376 pages, $26.95. Architecture is the best supporting actor in Rasenberger's book about ironworkers and their culture, including the fascinating story of one worker who fell during the construction of the Time Warner Building in New York. For architects, his well-researched chapters on trade unions and the history of steel construction are the most enlightening portions.

Higher: A Historic Race to the Sky and the Making of a City, Neal Bascomb, New York: Doubleday, 2003, 342 pages, $26. The well-known race between those who constructed the Chrysler and Empire State Buildings has made us forget who the original contestants were. Neal Bascom's book reminds us that it was the rivalry between William Van Alen and his former partner, Craig Severence, that really put the contest in motion. Severence's 40 Wall Street building and the Chrysler Building were running neck and neck for top honors as the city's tallest. Bascomb's well-researched book explains how the parcels of land were acquired for the project, how financiers raised the money, and how office layouts affected building economics. Such a discussion could easily be deadly dull, but the author doesn't let us forget the aura of excitement, speculation, and optimism that hung in the air during the waning months of the roaring '20s.

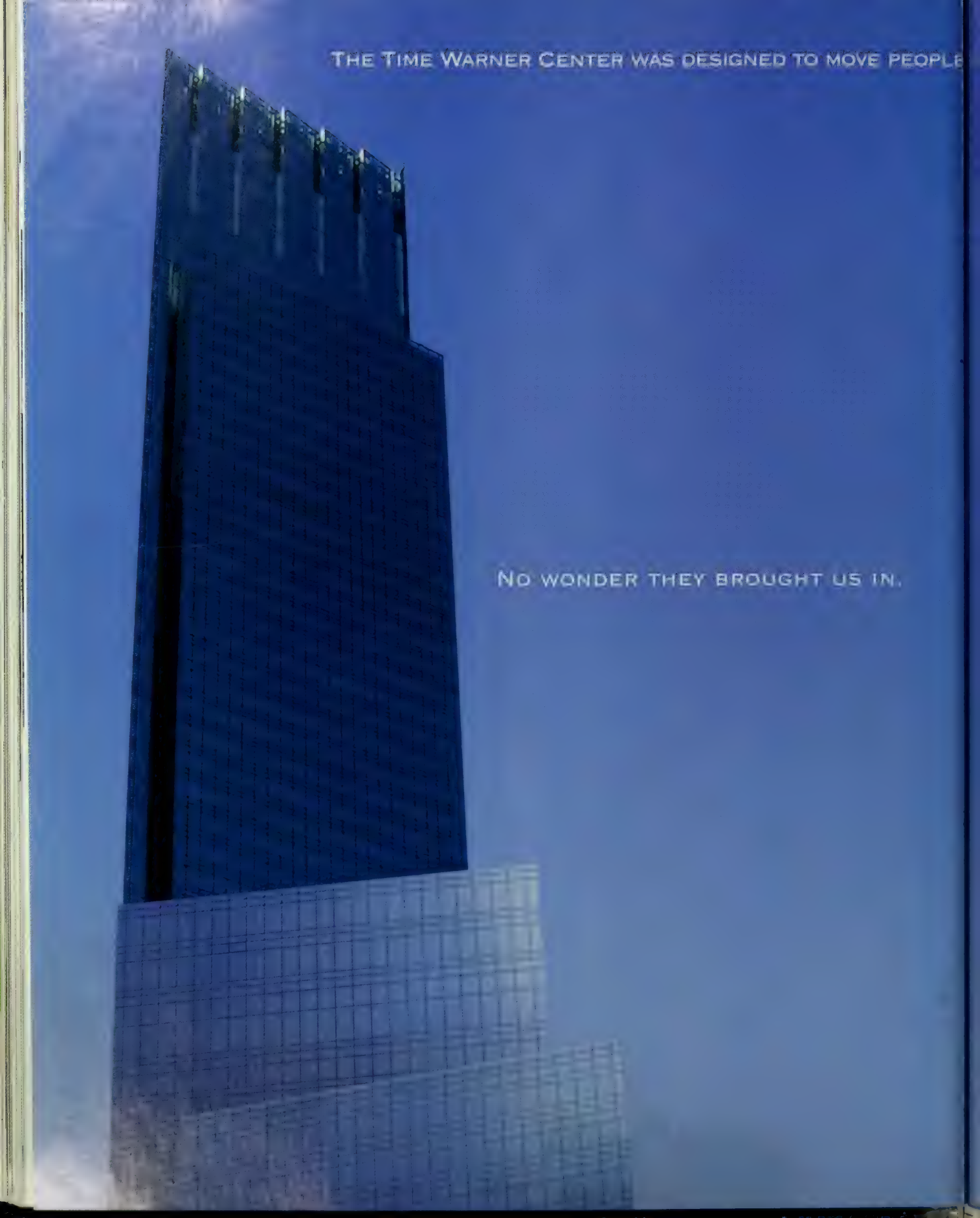
Divided We Stand: A Biography of New York's World Trade Center, Eric Darton, New York: Basic Books, 1999, 240 pages, $25. Since 9/11 there have been plenty of books written about the World Trade Center (and there will be plenty more). This book has the advantage of having been completed a full two years before the tragedy, when the author could focus without encumbrance on the political forces, financial gymnastics, and innovations in construction that made the Twin Towers possible. Reading it now, one can't miss the striking similarities between the epic struggles to get the original towers built and the troubles that have plagued the Freedom Tower since Libeskind's design was selected. Both projects have been seemingly willed into existence by powers that be; both suffer from the shifting of financial business from downtown to midtown and even New Jersey; and neither project is (or was) justifiable based on demand for office space. At least this time around, the development in lower Manhattan seems to be enjoying public support, and the Port Authority of New York and New Jersey didn't have to condemn a thriving neighborhood in order to get a building site. Regrettably, Al Qaeda's attack had the same effect.

The Rise of the New York Skyscraper, 1865–1913, Sarah Bradford Landau and Carl Condit, New Haven: Yale University Press, 1996, 478 pages, $75. This text is the most comprehensive book we know of that focuses on the early days of tall buildings. It covers everything from the urban and financial forces that prompted owners to build skyward, to a thorough and fascinating history of the engineering and technical advances that made the skyscraper possible. The chapter on corporate America's discovery that tall buildings serve as wonderful corporate icons is particularly insightful.

Form Follows Finance, Carol Willis, New York: Princeton Architectural Press, 1995, 215 pages, $27.50. Author Willis, now director of New York's Skyscraper Museum, pens a book that takes the financial forces shaping tall buildings several steps further. By comparing and contrasting buildings in Chicago and New York, Willis demonstrates how money and urban context shape both famous and not-so-well known tall buildings, from floor plans to facades.

Our list wouldn't be complete without including at least one book that's just for fun, and that's *New York Vertical*, by Horst Hamann, New York: teNeues Publishing Company, 1997, 166 pages, $19.95. Horst took a Linhoft Technorama—a super-wide-angle camera typically used to shoot panoramic images—turned it sideways, and then turned his lens on the architecture of the Big Apple. Not every photograph in the book features a tall building, but his renderings of the MetLife, Flatiron, and Empire State Buildings are simply unforgettable. ■




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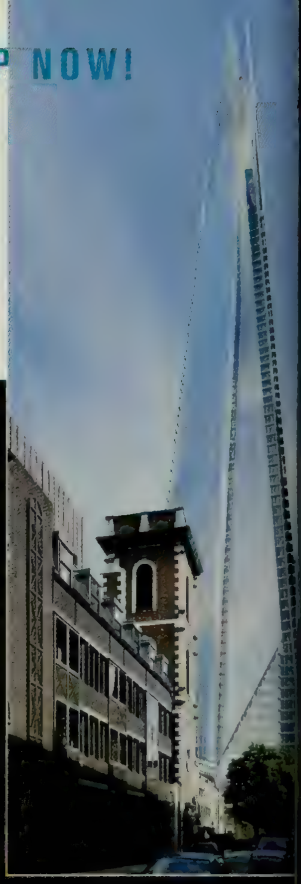
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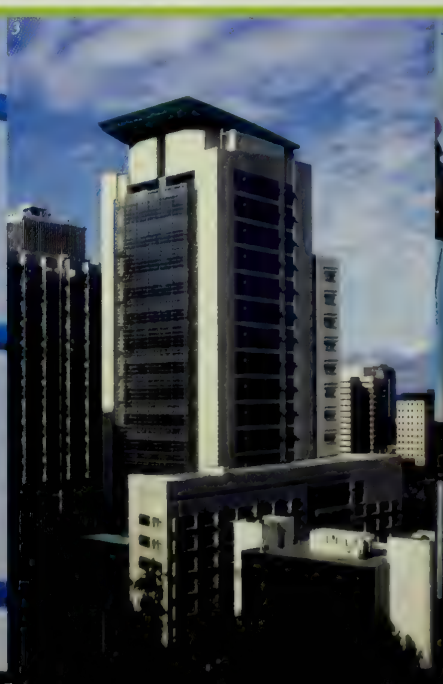
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INNOVATION

As cities seek ways to promote density, encourage mass transit, and conserve natural resources—all while attracting viable businesses and sustaining economic growth—building tall has emerged as a way to resolve these challenges.







By Deborah Snoonian, P.E.

What's a city skyline without skyscrapers? In the early 20th century, New York and Chicago announced themselves to the world with marvels of masonry and concrete, and later, in the 1950s, steel and glass. Corporations that commissioned high-rises took great pride in owning real estate that soared into the sky, demanding to be noticed. Tall buildings served as markers of modernity, icons of progress, aspiration, and economic prowess—traits that every city wanted to embody.

This remains as true today as it was when the first skyscrapers were erected, even after the destruction of the Twin Towers on 9/11 provoked concerns about safety and security. "Despite anxieties of a changed global environment, architects today recognize that the tall building can never be separated from the permeable fabric of the city and from the public activity for which it grows," wrote Terence Riley, curator of architecture and design for the Museum of Modern Art in New York, in the catalog for the recent show *Tall Buildings*. The 25 projects displayed there, as well as those featured in the stories that follow, showcase the vitality, exuberance, and technical wizardry that have always been markers for this building type. Although the skyscraper was pioneered in the U.S., emerging global capitals like Shanghai and Singapore and European cities like London are building high-rises at a rapid-fire pace, incorporating mixed uses and efficiency measures that their American counterparts are adopting.

Our examination of tall buildings doesn't end with this supplemental issue. On Tuesday, November 16, RECORD will convene its second Innovations conference in New York, featuring presentations by the design teams for three of the projects shown in the following pages: Deutsche Post, near Bonn, Germany, by Helmut Jahn (page 34); the *New York Times* Tower, by Renzo Piano and Fox & Fowle Architects (page 44); and the Freedom Tower in lower Manhattan by Skidmore, Owings & Merrill (page 48). The intense collaborations, technological sophistication, and attention to sustainability these projects have demanded hold lessons for buildings of any scale.

You can turn to pages 68 and 70 to get contact information for the suppliers, manufacturers, and research organizations whose innovations are highlighted here. And we hope to see you at our conference in New York later this month. ■

505 Fifth Avenue, by Kohn Pedersen Fox (far left); the Minerva Building, by Nicholas Grimshaw (middle left); the Bank of America Tower at One Bryant Park, by Cook + Fox Architects (near left).

Do skyscrapers still make sense?

By James S. Russell, AIA

Obituaries for the skyscraper were written after the terror attacks of September 11, 2001, targeted New York's tallest buildings. It was argued then that tall, prominent buildings were too risky. It was said they made less sense in a wired-together world that is moving us toward—in the parlance—more "distributive" business models, making the centralized model of downtown obsolete.

Tall buildings, instead, seem to be bigger news than ever. In Europe, skyscrapers are the lab benches for sustainable technology innovation. In Asia—especially in China—not only are towers erupting everywhere, the quality level is ramping up rapidly, according to Brian Lee, a partner in the San Francisco office of Skidmore, Owings & Merrill. In terms of energy conservation and workplace amenity, in China, "the next wave of expectations is that the quality of constructed performance will be as good or better than any buildings around," Lee says. The Jinling tower, proposed for Nanjing (page 30) is only one of perhaps a dozen ultrasophisticated SOM designs in China.

Asia is "the natural environment" of the skyscraper, said Carol Willis in a recent interview at Manhattan's Skyscraper Museum, which she founded and directs. "Skyscrapers make sense where density and the urban infrastructure make it the logical way to occupy land." High density is already an accepted norm in much of Asia. The huge boulevards and freeways being flung into the countryside around the biggest Chinese cities are accompanied by commuter rail lines and subways. It's why, says Willis, "you see towers still going up in Hong Kong, Guangzhou, and the other high-growth cities." The tallest, densest buildings rise over rail stations—preferably with airport access—whether in Hong Kong (KPF's 108-story Kowloon Station Tower) or London (Renzo Piano's 1,016-foot-high London Bridge Tower—page 33).

Revived downtowns and new business models spur tall-building innovation.

America's tall-building love affair has cooled, but such international developments are beginning to influence corporate decision-making here, especially regarding sustainable design. As projects featured in this issue make clear, the future of the skyscraper seems assured in New York City, even though soul-searching went deepest in Manhattan after the loss of nearly 3,000 peoples' lives in the Twin Towers disaster. Towers today may be more sculpted and more individual in form than ever, but the argument Willis made in her essential history of the skyscraper, *Form Follows Finance* (Princeton





London's low-rise skyline isn't unusual in Europe (rendering, left), but the shape of the city will be radically transformed by 2010 (large image) if several new skyscrapers by the likes of Rogers, Grimshaw, KPF, Wilkinson Eyre, and Piano go forward.

Architectural Press, 1995), still holds: the dramatic shapes reflect both evolving ways businesses use their facilities and the evolution of central business district economies.

Downtowns as nexus of human networks

The 40-year ebbing of American central business district population and influence seems quietly to have halted. Even Manhattan showed remarkable resilience as a business location, according to recent research conducted for the Russell Sage Foundation. "Three years after the attacks, financial firms have by and large decided to stay in Manhattan," explained Franz Fuerst, one of the Sage researchers, who is a research associate at the City University of New York's Graduate Center. In correspondence with RECORD, he noted that even Cantor Fitzgerald, a trading firm that lost two-thirds of its employees in the collapse of the Trade Center towers, will move into new quarters in midtown. Goldman Sachs recently unveiled a $1.8 billion new headquarters, designed by Pei Cobb Freed partner Harry Cobb for a site near Ground Zero.

Why does the city retain such appeal to firms that were so damaged by the terror attack? These same businesses, according to a recent *New York Times* report, are spending $3.8 billion annually on

TODAY'S POSTINDUSTRIAL BUSINESS RELIES ON ACCESS TO PEOPLE AND INTRICATE HUMAN NETWORKS.

security and disaster contingency planning. The key factor for financial firms, according to Fuerst, "is the tremendous importance of access to sensitive knowledge through face-to-face interaction and a tightly woven network of personal relationships between industry professionals, clients, suppliers, and other decision-makers."

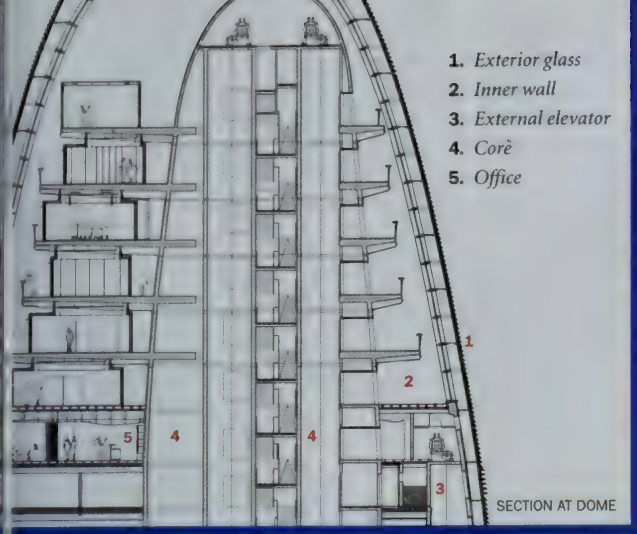
Finance is one business that recognizes the degree to which it relies on human networks and the settings that, Fuerst wrote, provide "access to sensitive knowledge"—restaurants, clubs, gyms, industry events. "The type of information needed to assemble highly complex financial deals and new products simply cannot be obtained via e-mail or phone," Fuerst added.

The Russell Sage researchers add to emerging research on so-called agglomeration effects, which is wonkspeak for the reasons businesses choose to locate near each other. Such research points to

Jinling Tower

In this design by the San Francisco office of Skidmore, Owings & Merrill for Nanjing, China, the square plan twists 90 degrees as it rises 320 meters (1,056 feet). Design partner Brian Lee and structural engineering partner Mark Sarkisian used an external diagonal grid to form a structural tube. The twisting form adds torsional strength. Above office floors, recesses add windowed perimeter to 27 levels of apartments. The recesses grow deeper on the top 23 levels, which are devoted to an atriumed hotel.





Agbar Tower
Acutely aware that the Agbar Tower rises in splendid isolation in Barcelona, architect Jean Nouvel has diaphanously veiled his wind-diffusing shape in an operable double wall in muted swirls of color. Within an exterior layer of tinted, pivoting glass, the thick structural inner wall shades operable glazing (sheathed in tinted metal mesh) from the powerful coastal light. The offset core and external elevator banks permit open, column-free floors. Construction finishes in mid-2005.

a new economics of place. A postindustrial business may depend less on easy access to natural resources but now relies more on human access and intricate human networks. (Consider how many consultants it now takes to design even ordinary buildings.)

These kinds of changes are rippling through the entire urban economy. It is just dawning on a lot of people that a peculiarity of our wired world is that we spend more time meeting with people and can never seem to get our "real" work done. The idea of having most of those people close by seems more necessary, not less.

Reconciling amenity and efficiency

European cities, traditionally hostile to tall buildings, are reinventing the skyscraper downtown. In London, decades of resistance to skyscrapers is crumbling, and perhaps a dozen new towers have been proposed in the historic center. Frank Duffy, of DEGW, a consultancy that tracks workplace change in both London and New York, put it succinctly: "The city learned it needs to have a diverse stock of buildings to survive." More important, the center remains desirable, not merely for business efficiency but for prestige, and because the notion of needing to be at the center of things is far more ingrained in Europe.

Central London's new towers fall far from the developer norm, however. Like 30 St. Mary Axe (RECORD, June 2004, page 218), the towers are urbanistically polite: they are slim and not too tall (to avoid casting deep shadows on surroundings), and flaunt their use of sustainable technologies and efficiency-enhancing amenities (daylight, informal meeting places, individually controlled natural ventilation). One reason is that people working in today's downtown tend to be highly paid specialists, and an amenable office has become part of what attracts talent.

American developers and large tenants have resisted the thin Euro towers with their small floorplates. They are costly and you can't gather enough people on a single floor, the argument goes. Some recent proposals address that criticism: Grimshaw's Minerva building (page 32), Murphy/Jahn's Deutsche Post tower, near Bonn (page 34 and RECORD, May 2004, page 96), as well as the Highlight Munich Business towers (page 35) mix amenity and space efficiency.

Higher first costs in Europe and Asia are not conceived to be the burden they are in America. Oliver Tyler, who has worked on several tall-building proposals in the London offices of Wilkinson Eyre, commented, "Better design is reflected in rents." As important, "You get

through planning permissions more quickly." Though London's gamut of approvals is daunting, most of the proposals, some made years ago, remain in play. The reason for optimism has to do with the city's solidifying position as Europe's key global hub. It has definitively eclipsed Frankfurt as Europe's financial-services capital. There's one reason, says Duffy: "Because it has more people with more skills in one spot."

London's success highlights another irony of a wired and "distributed" global economy: it is making large, hub metropolitan areas more important than ever—those places that have the depth and expertise that cannot be found anywhere else. America's largest cities—New York, Chicago, Los Angeles—are consolidating their global-hub status. The idea that businesses must cluster downtown has seemed quaint in this country for a decade or two. The assumption has been that technology would liberate us from the inconveniences of the congested center, an assumption that the business disruptions of 9/11 only seemed to confirm.

Like the paperless office, this long-predicted future has not yet come to pass. Instead, businesses seek to bring the interactive urban business culture inside the office building. "What's important is the permeable boundaries, the way people move from one organization to another in their workday, meeting people," explains Duffy. "Mapping movement patterns would give a sense of the intricacy of business relationships, as well as the degree to which they now depend on face-to-face encounters and serendipitous meetings." Unfortunately, most companies encourage interaction by cramming more people closer together in smaller cubicles. "We don't know how to model" that intricate dance of idea-generating encounters, confesses Duffy. But most companies do know how to count up dollars spent per square foot on rent.

America's predominantly suburban white-collar business model doesn't ease intense interaction. You not only have to get in the car to see anyone, the trips are getting longer and more congested. Even "densifying" suburban downtowns isn't easy. "They tend to be podlike, with a single point of entry," said Robert Lang, interviewed at the Alexandria, Virginia, office of Virginia Tech's Metropolitan Institute, where he is director. He spoke of employee resistance to a large-company consolidation outside Atlanta. Just getting off the freeway now takes 20 minutes, they argued, don't make it worse. "As these places infill," Lang adds, "congestion goes up more quickly than density"—giving a new edge to downtown.



Minerva Building
On the low floors, Grimshaw stretched a rectangle to fit central London's medieval street pattern, accommodating 39,000-square-foot trading floors. Atop those floors, an atrium, cut diagonally across the site, makes an appealing meeting place. One wedge, forming 14,000 square foot floors, rises above the atrium to 50 stories total, minimizing the 1-million square foot building's visual bulk. A rarity in spec buildings, the naturally ventilated triple-glazed wall can all but eliminate mechanical cooling, if tenants choose.





London Bridge Tower
Renzo Piano's tapering sharklike forms stack a narrow spire of apartments above a hotel and a thick base for office and retail, as well as a revamped rail station. The functions are divided by dramatic multilevel complexes of shops, meeting rooms, cafes, and observation galleries—all visible from outside, especially at night. The ventilated, double-glazed facade reduces heat gain, but residential floors also draw heat from office floors; any excess heat radiates from the spire.

Mixed use comes of age

"A skyscraper can be an acre on a floor, two dozen acres altogether," says Ken Yeang, principal of Hamzah & Yeang, who has pioneered eco-towers in both temperate London and tropical Kuala Lumpur. "If you spread all that space out, you can only think of it in terms of urban design." This leads naturally, he thinks, "to more amenities, more social opportunities." Such tower innovations as sky gardens and atrium spaces for casual meetings over coffee are trickling into the U.S. market. Open stairs are tucked into the floor edges in the design Renzo Piano has made for the *New York Times* (page 42)—encouraging idea-sharing by giving these meeting places the choicest real estate.

Yeang goes farther, urging in his designs and his writings a mix of uses that collide in garden spaces chopped out of the tower bulk. (See *Reinventing the Skyscraper: A Vertical Theory of Urban Design*, 2002, John Wiley & Sons.) Mixing uses in towers, once rare, is rapidly becoming far more common.

New York's recently completed $1.7 billion, 2.1-million-square-foot Time Warner Center may take the prize for diversity.

BUSINESSES STILL UNDERVALUE INFORMAL PERSONAL ENCOUNTERS. DESIGNERS ARE READY TO HELP.

Behind its tinted-glass skin, you'll find a four-level shopping center over a basement supermarket and health club. Two office chunks perch atop the mall, one devoted to Time Warner (including studios for CNN) and one tenanted. The just-opened Jazz at Lincoln Center glows in the middle from behind a five-story-high square of glass suspended by cables. A residential tower rises above Jazz to the south. The north tower includes a 251-room hotel and more condominium apartments.

The advantage for the Related Companies' Steve Ross, who developed the massive project, was that the various uses balanced the financial risks, according to Gregg F. Carlovich, a Related resident manager. (For a history of the project, see RECORD, June 2003, page 86.)

Time Warner Center's quiet, bespoke exterior clads dizzying complexity. "Each use has its own structural and mechanical solution," explained Mustafa Abadan, the design partner for the project. So the massive loads from the concrete-frame-and-shear-wall structure for the hotel and residential levels is transferred

through gigantic trusses to a steel-framed office grid. The long spans in the shopping concourse fell outside the higher bulk of the building. "Each use had to have its own lobby presence," added Abadan. "People expect that sense of exclusivity." Those seven lobbies also enliven Columbus Circle, an important urban open space, 24 hours a day. Skylobbies would probably have been more space efficient, but tenants and owners who pay top dollar do not want to transfer, Abadan said. One hundred-thirty elevators serve the building.

A number of towers on the boards express their mixed-use nature explicitly. Renzo Piano's London Bridge Tower stacks a narrow spire of apartments above a hotel and a thick base for offices and retail, as well as a revamped rail station. The functions meet at dramatic skylobbies—visible from outside. Form elegantly transforms as it rises through different functions in SOM's Jinling tower.

Towers as lab benches for sustainability

The skyscraper has always been used to prove new technology that then spreads more widely throughout the building industry. The greatest focus recently has been on energy conservation, which can seem quixotic because everything about skyscrapers seems to demand conservation compromises: If you introduce more glass to use less electric lighting, you add heat gain. If you build shallower floors or add secondary glass walls for insulation you add a great deal not only to construction cost but to material used in construction. The narrow floor plates used often in northern Europe look inefficient because of the relative size of cores and structure.

But the penalties for pursuing conservation are rapidly dwindling. Holistic analysis of "building physics" (now common in Europe) is displacing the traditional mechanical-engineering focus on cubic feet of air moved per minute. Advanced designs use the buoyancy effects of air in double curtain walls. They exploit diurnal temperature swings and manipulate building form both to encourage natural ventilation and to reduce heat gain.

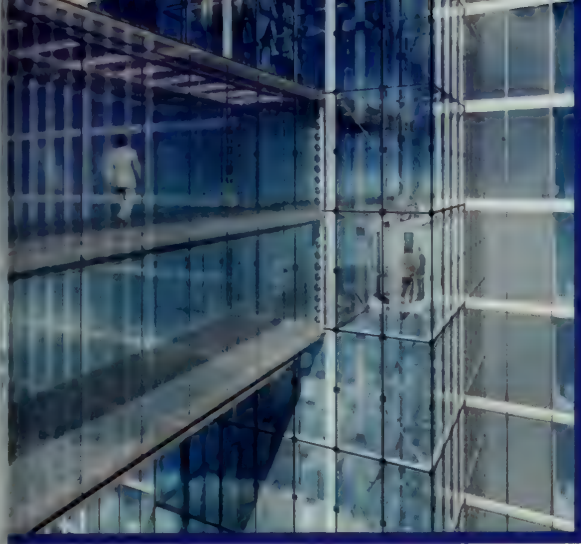
Advanced distributed-air systems reduce ductwork needs and shaftways, according to Matthias Schuler, of Transsolar, a pioneer in the use of nonmechanical means to achieve user comfort. This delivers lower floor-to-floor heights for the same ceiling height and gets more usable square feet per floor. Like many foreign tall-building innovators (Schuler is based in Stuttgart), he is optimistic enough about America jumping on the innovation bandwagon to open a



Deutsche Post Tower

Both externally and internally, Murphy/Jahn, collaborating with engineer Werner Sobek and building physics expert Matthias Schuler, has created a tower in Bonn of unique transparency. Atriums and skygardens divide the two offset arcs of floor space on almost the entire height of the tower. It's easy to see and meet people anywhere. A "shingled" double facade on the south-facing side admits fresh air. The atriums double as exhaust shafts. Groundwater cooling in the ceiling absorbs excess heat.





Highlight Munich Business Towers

Two narrow, offset towers (by Murphy/Jahn, in construction) open to views, yet shade each other, reducing heat gain. The single-layer, triple-glazed facade includes ventilating windows shielded by perforated metal panels. Fan coil units in the floor and radiant concrete ceilings offer comfort at low operating cost. Bridges link the towers, doubling the floor plates where desired. The bridges are demountable; up to eight can be "clipped on."

New York office. By separating dehumidifying from ventilating and cooling, Schuler argues, cooling energy can be dramatically reduced even in the sealed buildings that prevail in hot, humid climates where the northern European natural-ventilation techniques don't work. The tilt of units in the "shingled" curtainwall of a Murphy/Jahn tower he has collaborated on leaves space for fresh-air vents in soffits on each floor. If necessary, the air can be cooled or heated using miniaturized fan-coil units tucked beneath the floor. This "breathable" skin saves energy and simplifies and reduces the building's mechanical requirements. Jean Nouvel takes solar protection yet another step in the Agbar tower in Barcelona (page 31).

Structural advances, such as the diagonal external grids that are appearing more frequently on new designs, also reduce core sizes and column needs, increasing usable floor area. For very tall buildings, cores laced with trusses combined with massive outrigger structures liberate tower form and allow more usable space. They have become more common since their early use by Thornton-Tomasetti and Cesar Pelli in Malaysia's 1998 Petronas towers. They figure in a number of designs selected by Guy Nordenson and Terence Riley for the recent "Tall Buildings" exhibition at the Museum of Modern Art. (There is a catalog published by the museum.)

Do skyscrapers still make sense?

"I don't believe the challenges are in making towers bigger, but more livable," says Craig Schwitter, a structural engineer with Büro Happold in New York. Indeed a great deal of versatility can economically be incorporated into much lower towers. Concrete framing, for example, can permit geothermal cooling through the slab, according to Schuler, a scheme that may reduce cooling costs to almost nothing. With American companies generally looking to drive occupancy costs lower (and with first-costs remaining paramount), America isn't ready yet to move to the forefront of tall-building innovation. The terror attacks three years ago—of all things—may have galvanized change in the slow-moving sensibilities of the real-estate industry. "Buildings can't be seen as adversarial," explained Schwitter. He argues that wary tenants and staff become more comfortable with working on high floors when they incorporate green space, when they minimize discomfort and make the most of daylight and fresh air. ■

By Sara Hart

Slender, Robust, and

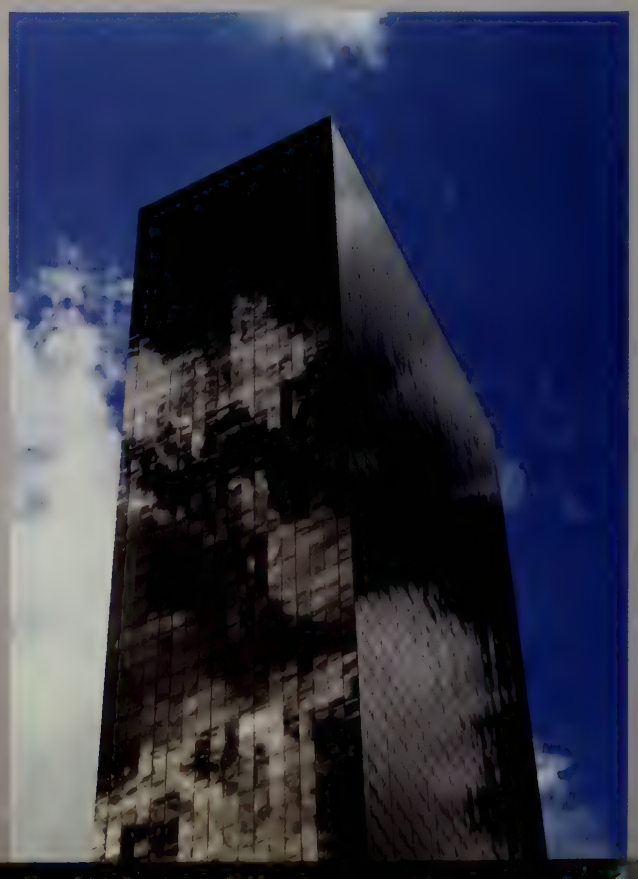
Think of the Empire State Building, the most famous skyscraper in the U.S. and the tallest building in the world from 1930 until the 1970s. Riveting archival film of the steel erection shows ironworkers casually eating lunch perched on steel beams hundreds of feet above the ground, working without a net, the steel flying up at a rate of four-and-a-half stories per week. The speed and heroics are just as vital to the mystique and admiration as the architecture of Shreve, Lamb, & Harmon. It remains the most prominent architectural icon on the Manhattan skyline and the most notable symbol of steel's domination in New York high-rise construction for most of the 20th century.

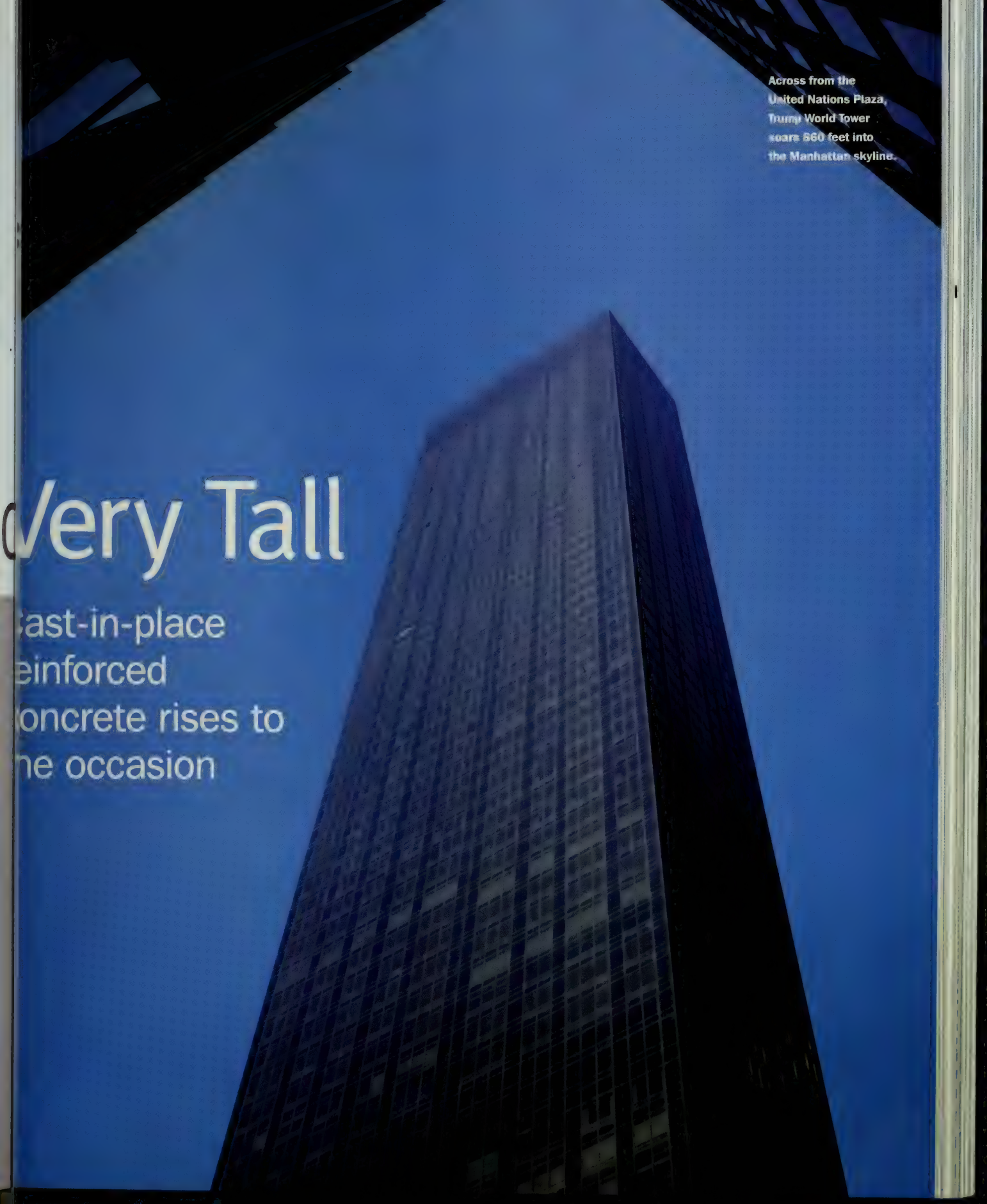
In 2004, all sorts of innovations in methods and new materials are attracting attention in the high-rise building industry. And yet it's the world's oldest building material—concrete, in its modern cast-in-place reinforced incarnation—that is being touted as the material for the future. While it's true that other kinds of innovations propelled steel ahead of concrete, including the acceptance of new forms of fireproofing, such as intumescent paints, cementitious spray-on coatings, and sprinkler systems, the concrete industry is blitzing developers, builders, and architects, arguing that concrete is the safest and most reliable material for skyscrapers. (Due to legitimate concerns regarding the safety of tall buildings after September 11, even most laypeople these days know what constitutes a "hardened core." This is not lost on the advocates of concrete construction, even as they try not to belabor the point.)

Concrete construction offers other advantages in addition to better fire and blast protection—slenderness, thinner floor plates, and fewer internal columns. Modernism is associated with narrow towers rising elegantly, in the best cases, into the skyline. Cast-in-place reinforced concrete provides the rigidity such slenderness demands. Degree of slenderness is described by the aspect ratio, or the relationship between a building's height to its width. For example, Jacob Grossman, principal of Rosenwasser/Grossman Consulting Engineers in New York, has engineered many slender towers, including the Carnegie Tower designed by Cesar Pelli in 1991, which remains the tallest commercial concrete skyscraper in Manhattan. It has a "double-tube" concrete structure with wind-load resistance designed into the spandrel beams, which made possible an aspect ratio of 15:1 and 10:1 for the two vertical elements.

Donald Trump's Manhattan real estate conquests are as





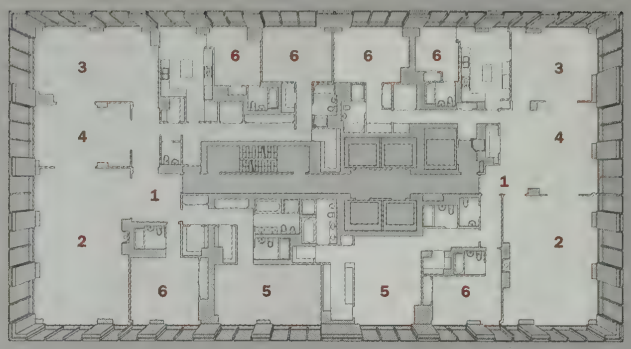


Across from the United Nations Plaza, Trump World Tower soars 860 feet into the Manhattan skyline.

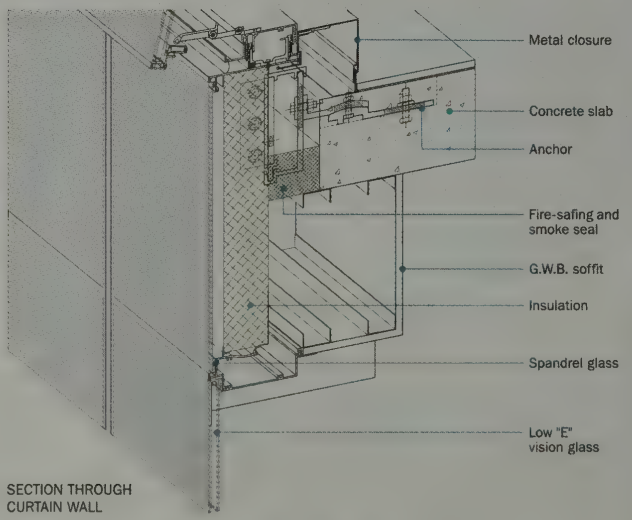
Very Tall

Cast-in-place reinforced concrete rises to the occasion

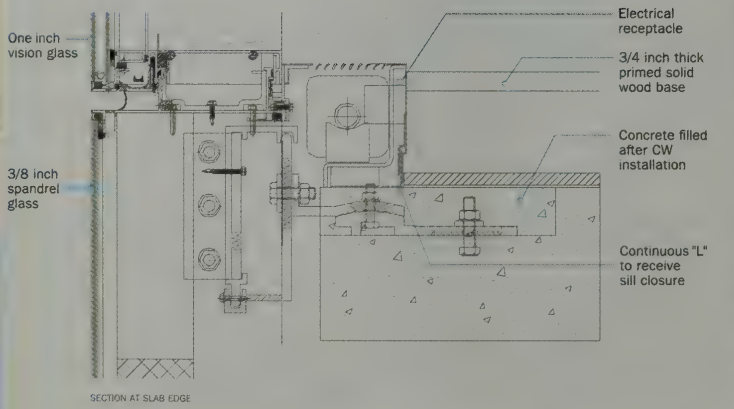




1. *Foyer*
2. *Living room*
3. *Dining room*
4. *Library*
5. *Master bedroom*
6. *Bedroom*



SECTION THROUGH CURTAIN WALL



SECTION AT SLAB EDGE

Cast-in-place reinforced concrete provides stiffness against wind loads, reduced floor-to-floor height, elimination of ceiling finishes, better soundproofing, and a two-day construction cycle.

legendary as his architectural contributions to the urban fabric are notorious. At least 10 skyscrapers bearing his name inhabit Midtown. Given that great height is an economic reality in New York, altitude alone does not usually arouse harsh architectural scrutiny. Tall is the accepted rule until a cunning developer slips outside the designated high-rise zone. Trump did just that by choosing a site across from the United Nations to erect Trump World Tower—the tallest residential tower in the world (since surpassed by Tower Palace Three in Seoul). Opposition was loud and fierce and much reported, but Trump prevailed and his $400 million monument to luxury living was completed in 2001.

It's unfortunate that, at the time, the controversial real-estate coup overshadowed the engineering and design finesse of the project's architect, Costas Kondylis and Partners, and structural engineer, Cantor Seinuk. Trump World Tower is an unadorned rectangle that rises 860 feet without setbacks or visible bracing. Most observers would assume that its height alone would require a steel frame, even though most residential buildings are concrete. In fact, concrete is the only practical material that can achieve such slenderness.

The owner wanted a spacious loftlike feel to the apartments, which would also be reminiscent of those sprawling pre-war apartments for which New York is famous. Ceiling heights in the tower's apartments range from 10 to 16 feet. To balance such volumetric generosity, it was necessary to create as many floors as possible. Because concrete floor plates are thin, a cast-in-place concrete system gains an additional floor for every 10 stories when compared to steel framing.

The engineering strategy is ingenious in its concrete management. According to the Concrete Industry Board, the building claims the first use of 12,000-psi concrete in New York. This provided the stiffness in the shear walls to allow the architect to achieve an aspect ratio of 11:1, which gives the tower its elegant slenderness. In addition, 10,000-psi concrete was used to minimize column sizes while increasing their load-bearing capacity. Although the slabs

required no more than 4,000 psi, the concrete was upgraded to comply with the load-transfer requirement at the slab-column joint.

The tower is supported on bedrock with a bearing capacity of 40 tons per square foot. The lateral force resisting system consists of shear walls and frames interacting for the full height of the building with a perimeter concrete band at midheight and another at the top.

That's a lot of pouring, reinforcing, and climbing to reach 860 feet. Some of the most important innovations in cast-in-place reinforced concrete construction have been in the erection process. Time is money, and steel has always been faster, or at least that is the perception in the construction industry. PERI, a scaffolding and form work company headquartered in Germany, raised the floors. It formed 22 of the 27 perimeter columns, reserving the remaining column locations for crane access. Twelve climbing platform units on the facade were powered by five hydraulic power packs. A separate power pack was available for each of the three shafts. The PERI scheme called for forming the facade columns and main load-bearing walls and shafts together with the floor slabs. The columns, walls, and shafts were poured first, followed by the floor plate. The workforce was 187 strong during this process. They were able to complete a floor in a three-day cycle. After the 22nd floor was complete, they accelerated to a blistering two-day cycle.

505 Fifth Avenue is one of the last great sites in Midtown Manhattan. On the northeast corner of 5th Avenue and 42nd Street, the site enjoys distinguished company—the New York Public Library, Bryant Park, and Grand Central Terminal. For one developer, the inherent glamour of the location compensated for its small size. Kipp-Stawski develops boutique office buildings for tenants who require less space but more amenities, so it was not in need of the typical 25,000-square-foot floor plates. It was more important to principal Axel Stawski that he get an elegant design for that prominent location.

New York–based Kohn Pedersen Fox (KPF) has built scores of distinguished commercial towers in New York, all with steel structures. Kipp-Stawski offered the firm its first commercial cast-in-place reinforced concrete superstructure. As with the Trump World Tower, concrete offered both sturdiness and thinner floor plates, the latter giv-



505 Fifth Avenue by Kohn Pedersen Fox is the best of two worlds—a fortified concrete body clad in an exquisite transparent skin.

ing the owner two more floors of rentable space.

KPF exploited the structural system—columns 30-feet on center—to produce flexible floor plans. The flat plate floors are only 11 inches deep, although the depth is 22 inches at the column capitals. To avoid that larger depth at the perimeter in the office tower, the floor plates are cantilevered 15 feet from the interior columns. This move also eliminates the need for perimeter columns, giving the architect freedom to create a delicate facade and to optimize daylight and views. Senior designer Douglas Hocking, AIA, explains how they kept the curtain wall pure and the vision glass from floor to ceiling: "Since we don't have an 18-inch sill for the base and don't want a crash bar, the inner lite of the double glazing is laminated. Furthermore, sprinklers run at the perimeter every six feet to provide extra fire protection."



Carnegie Tower is a slender slab of cast-in-place reinforced concrete.

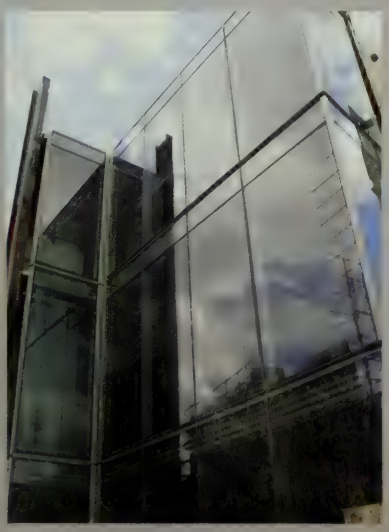
This strategy is ingenious, but it did create several challenges for the designers. Project manager Christopher Stoddard, AIA, explains, "One of the greatest challenges was designing the curtainwall to accommodate both the interstory live-load deflection at the cantilever and the inherent shrinkage of concrete structures. The amount of combined live-load deflection, shrinkage, and movement due to building sway was just shy of one inch. This potential movement had to be accommodated in the cladding system while maintaining a positive visual aesthetic and a weather-tight enclosure." Although completion is a year away, 505 Fifth Avenue is already the poster child for the Concrete Alliance, an industry organization that advocates cast-in-place concrete in commercial buildings in New York.

Jacob Grossman, whose firm Rosenwasser/Grossman engineered 505 Fifth Avenue, observes that in the past 20 years, the rest of the world has built the tallest buildings out of cast-in-place reinforced concrete. He predicts that concrete will edge past steel for commercial building in New York in the near future, either as all-concrete or composite (steel frame/concrete core) structural systems. Whereas it's still true that steel allows for longer spans than concrete, spans greater than 50 feet can be achieved by either rediscovering two-way waffle-joist construction (used extensively before the recession in the 1990s) or by post-tensioning—a method by which a steel cable is threaded through a sheathing and is tensioned after the concrete cures. "If you asked me a while back about post-tensioning, I would have said that it was hard to manipulate, prevent moisture corrosion, and accommodate future penetrations," explains Grossman. "However, in the past few years, the system has improved a great deal with the introduction of bonded post-tensioning, so my reservations have been somewhat lessened. I'm still hoping that continued development [and a trained labor force] will make it economical, and then my lingering reservations will be gone." (*Bonded* means that the cable is grouted to the sheathing, and the sheathing is bonded to the concrete.)

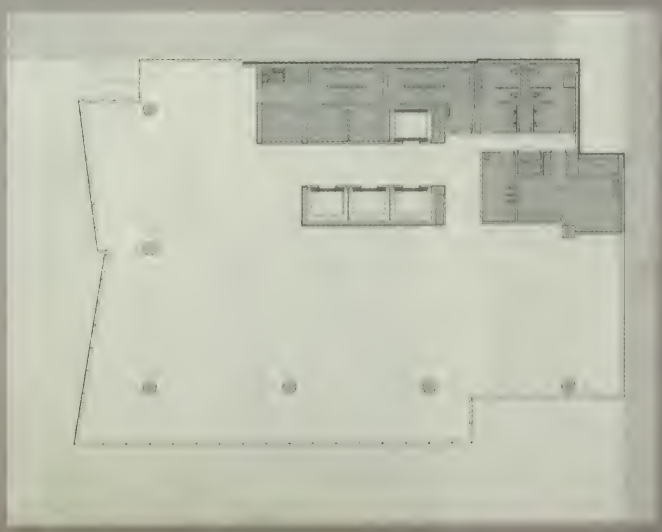
THE INTERDEPENDENCE OF ARCHITECTURAL FORM AND STRUCTURE IS WHERE ART MEETS SCIENCE.

Meanwhile, across the East River in Queens, Local 46 of the Metallic Lathers and Reinforcing Ironworkers Union is responding to the call for highly skilled workers. In the basement of its Learning Center, full-scale mock-ups show two ways of reinforcing cast-in-place concrete. One shows the typical grid of rebars used in most construction. The other installation shows how post-tensioning works with fewer rebars and sloping cables. Determined to stay ahead of the learning curve, the union is teaching those skills in anticipation of a shift to this technology in New York.

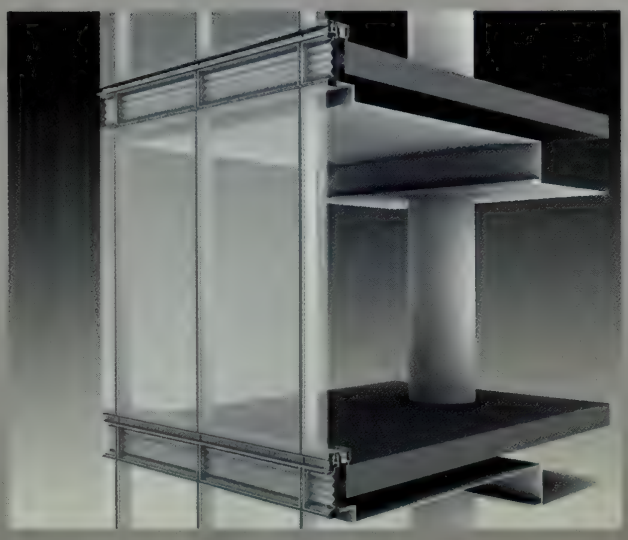
Innovation is often buried in the details. The interdependence of architectural form and its underlying structural system is exactly that intersection where art meets science. Trump World Tower can rise solidly 860 feet because of this meeting. For the same reason, 505 Fifth Avenue will win accolades for its taut, transparent skin, seemingly held to the structure by magic. ■

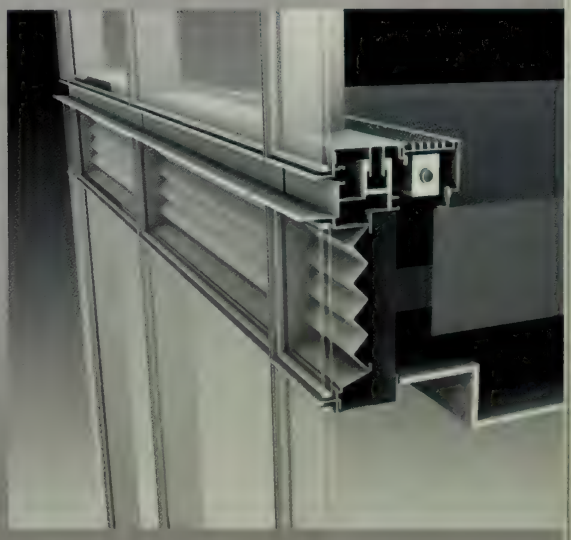


The columns on the upper floors of 505 Fifth Avenue are recessed 15 feet to allow for a curtain wall that is uninterrupted, thus optimizing daylight and views.



Thin concrete floor plates made it possible to get an additional two floors in the envelope. The floors are cantilevered 15 feet from the columns, which required careful detailing of the curtain wall to accommodate deflection and shrinkage.

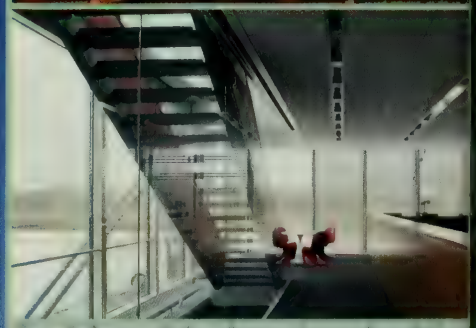




Green grows up..

Sustainable high-rises are sprouting from Manhattan's bedrock.







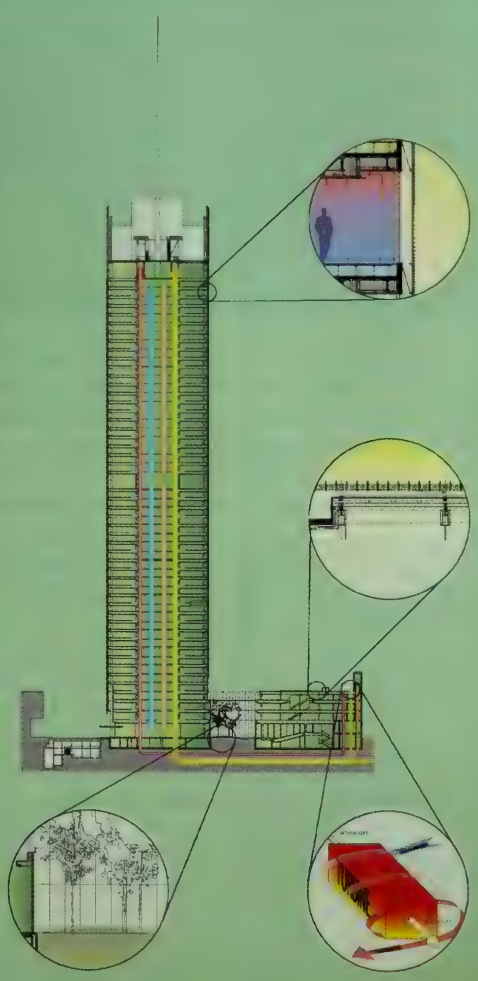
nd **up** and **up** and **up**

By Deborah Snoonian, P.E.

Tall buildings are getting greener. Or green buildings are getting taller. Either way you slice it, the sustainability movement in the U.S. has gone large-scale and skyward, and nowhere is this more apparent than in New York City. By the end of this decade, several green high-rises now planned or under construction will pepper the Manhattan skyline, including a headquarters for the nation's leading newspaper, the Freedom Tower, apartment buildings, and office towers for a financial institution and a major publisher.

Why the surge? New York owners and developers say they've discussed green design for years, but no one wanted to be the first to take the plunge—that is, until the Durst Organization hired Fox & Fowle Architects to design the Condé Nast Building at Four Times Square. Within a year's time from 1999 to 2000, Four Times Square opened, Battery Park City's environmental guidelines for residential construction were passed, and the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification program was established. "Those three events changed everything," says one developer who wished to remain anonymous. "Before that, we said, 'Why bother?' No one understood green design or what its advantages were. But after Four Times Square, everyone thought, 'We can do that too.' And LEED gave us a blueprint for understanding how to get there."

The projects underway involve committed clients who've hired architects capable of leading multidisciplinary and often international teams through the confusing choreography of standards, guidelines, and best practices for sustainable design. Though the technologies and strategies they employ aren't always new, many are rare in tall buildings in the U.S.—a situation that will change as more cities embrace density and draft their own sustainability principles.



New York Times Tower
Among the green features of the building (clockwise from top, diagram at right) are a solar screen of ceramic rods, automated skylights, onsite cogeneration, and a courtyard garden. The lowest levels of the building (inset, top and bottom) offer full transparency, with views out and in. Extensive lighting studies were performed at a full-scale mock-up (inset, middle), which was also used to test furniture layouts and the constructability of the facade. The tower's high-tech lighting and shading system will be commissioned at the mock-up before installation.

The Grey Lady's green makeover

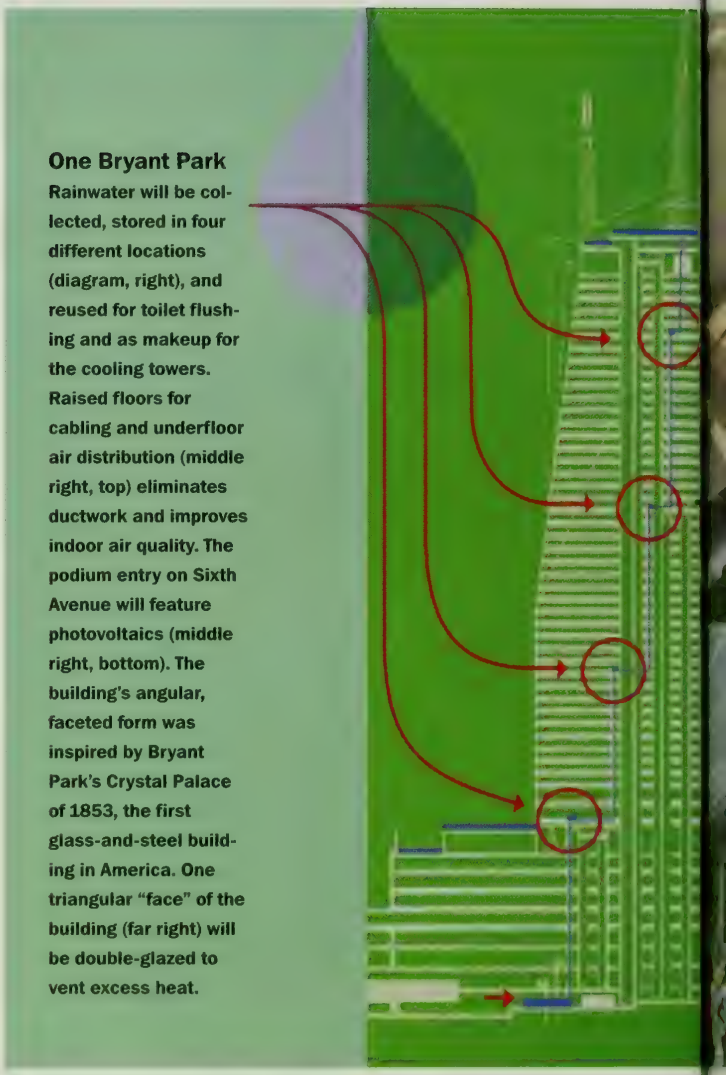
When Renzo Piano Building Workshop and Fox & Fowle Architects were chosen as the winning team for the new headquarters of the *New York Times*, critics swooned over its facade of ultra-clear glass shaded by a scrim of white ceramic tubes. As owners, though, the *Times* was concerned about glare and heat gain. Would eye-strained reporters literally sweat over their deadlines as they cranked the air-conditioning to budget-busting levels? In late 2002, lighting consultants SBLD Studios and interior architect Gensler were already evaluating lighting and shading systems when David Thurm, vice president of facilities for the *Times*, happened upon a technical paper written by Stephen Selkowitz, a lighting expert and head of the building technologies department at the Lawrence Berkeley National Laboratory in California.

So began a one-of-a-kind research project. The *Times* design team met with Berkeley Lab

researchers, who recommended an integrated facade management system of dimmable lights and mechanized shades that would respond to the sun's angle and intensity. Just weeks later, the *Times* decided to build a freestanding mock-up of the tower [RECORD, March 2004, page 169] that would let them test real-world conditions for such a system, and by mid-June, Berkeley Lab secured a grant from the New York State Energy Research Development Authority (NYSERDA) to collect data they'd need to design it. By the first day of winter 2003—less than a year since the initial meeting—the mock-up stood complete and over 100 sensors began collecting data for a solstice-to-solstice study that allowed researchers to model light conditions year-round. The zones and control schemes were tweaked continually as data were collected. "We didn't want fixtures going on and off, or shades going up and down constantly," says firm principal Bruce S. Fowle, FAIA. The study showed that enough daylight penetrated the 44-foot perimeter zone of the building to permit lights in that area to be dimmed, if not turned off entirely, and lighting energy savings in winter ranged from 10 to 70 percent.

The design team issued solicitations based on detailed performance specifications written during the study. Just last month, Mecho Shade, Lutron, and Zumtobel were selected to provide shades, dimmable ballasts and controls, and custom fixtures, respectively. A second NYSERDA grant will allow these suppliers to commission their systems in the mock-up before installation. "This will reduce the chance of poor performance and cost overruns," says Thurm, problems that have plagued wider adoption of these technologies.

The design also calls for underfloor air distribution (UFAD) on the floors occupied by the *Times*. Though it's known to improve indoor air quality, UFAD hasn't been used much in U.S. high-rises. "There's a false perception that raised floors sound cheap," says Fowle. "That may have been true years ago, but not anymore." To plan its implementation, the *Times* gathered nearly 40 architects, engineers, and consultants involved with the new tower and a building for another paper they own, the *Sarasota Herald-Tribune*. "We worked out construction sequencing and other details that would have been difficult to do in one-on-one meetings," including measures to keep the plenums clean, says Glenn Hughes, director of construction for the *Times*.



One Bryant Park
Rainwater will be collected, stored in four different locations (diagram, right), and reused for toilet flushing and as makeup for the cooling towers. Raised floors for cabling and underfloor air distribution (middle right, top) eliminates ductwork and improves indoor air quality. The podium entry on Sixth Avenue will feature photovoltaics (middle right, bottom). The building's angular, faceted form was inspired by Bryant Park's Crystal Palace of 1853, the first glass-and-steel building in America. One triangular "face" of the building (far right) will be double-glazed to vent excess heat.

PROJECT	ARCHITECT	HEIGHT	#FLOORS	COMPLETION
The Solaire	Cesar Pelli & Associates	250'	27	2003
The Helena	Fox & Fowle	405'	37	2004
211 Murray Street	Cesar Pelli & Associates	230'	24	2005
The Hearst Tower	Foster and Partners	597'	41	2006
New York Times Tower	Renzo Piano Building Workshop/Fox & Fowle	748' (1140' with mast)	52	2007
One Bryant Park	Cook + Fox	945'	54	2008
Freedom Tower	SOM	1,776'	70	2008

A bank invests in efficiency

Just a few blocks east of where the *Times* broke ground in August, another glazed tower began construction. Designed by Cook + Fox Architects, One Bryant Park is being codeveloped by its main tenant, Bank of America, and the Durst Organization. The project team is gunning for LEED platinum—a first for an office high-rise.





Though European architects have turned to double-walled glazing systems for efficiency, such a system wouldn't have worked here because of New York's hot, humid summers, says partner Robert Fox, AIA. Still, one "face" of the building, which looks south toward Bryant Park, will be double-glazed to prevent heat gain, and floor-to-ceiling glass will be fritted at the top and bottom for interior comfort but left clear in the middle to preserve views.

A variety of energy-saving technologies are planned, including an onsite 4.6-megawatt cogeneration system, geothermal heating and cooling, and building-integrated photovoltaics (BIPVs) installed in three places—atop a glass roof that floats over the subway entrance, along the entry pavilion on the southeast corner, and on spandrels that support a 10-story notch on the eastern facade. Though they won't produce large amounts of electricity, "we used BIPVs near the ground so people could see them and learn the importance of renewable energy," says partner Richard Cook.

Fox says sustainable design has taken leaps and bounds in the years since he and former partner Fowle designed the Condé Nast Building and helped draft Battery Park City's guidelines. "Back



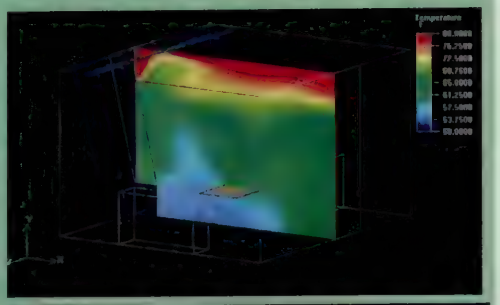


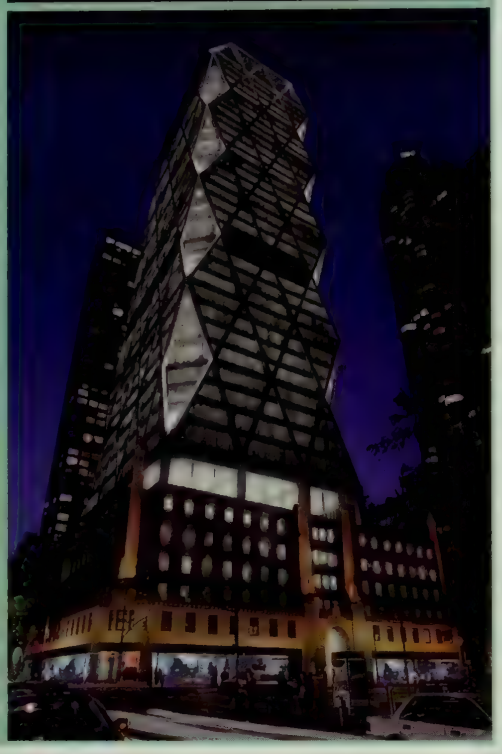
then the architects and owners really led the process, but now we're used to teaming up with engineers and consultants earlier on. And for Bank of America, we challenged ourselves to make the best use of everything that's available for free: air, sunlight, rainfall."

As in the *Times* building, UFAD will be used on floors occupied by Bank of America. Other features include a one-acre planted roof on the podium and an air filtration system that removes 95 percent of particulates, compared to 35 percent for most buildings and 85 percent at Four Times Square.

A publisher puts its magazines under one roof

In the mid-1990s the Hearst Corporation, whose titles include magazines like *Esquire* and *Cosmopolitan*, began looking at its real-estate operations in New York with an eye toward consolidation. After analyzing the rental market and crunching the numbers, they decided to build their own space—sustainably. "Buildings have such a huge impact on the environment and health, so having our own green building was a way to recognize this and put our employees first,"





arst Tower
en finished, the ding will house all learst's magazine- lishing operations lew York. Irregular ners and angles ne structural diagrid ed a challenge to ineers designing HVAC system, who d computational d dynamics (graph, right) to analyze low patterns on h floor. In a twist double-walled con- ıction, the spaces ween the new ıcture and the pre- ved facade as well a neighboring apart- nt building will be d to move and vent Rainwater will also collected and sed onsite for gation and as cool- tower makeup.

says Brian Schwagerl, director of real estate and facilities planning for Hearst. Foster and Partners won the commission for its first major work in the U.S. With his usual technical rigor, Lord Norman Foster designed a glazed tower that's being inserted—where else?—into the shell of the original 1927 Hearst Building, to which a planned high-rise was never added.

The building's 856,000 square feet will contain a skylit atrium with a cafeteria and auditorium, a water feature (still under consideration) fed by harvested rainwater that would provide cooling in summertime and help with humidification, and space for all of Hearst's magazine employees in New York. The project is expected to garner the first LEED gold rating for a commercial office tower in New York State.

After analyzing several HVAC options, including UFAD, engineers Flack + Kurtz opted for slab-integrated heating and cooling with low-temperature air. Temperatures can be controlled from stations located on each floor, and in lieu of floor-by-floor mechanical rooms, central air handling units will be housed on the 28th floor to make it easier to flush them with outside air. Engineer Paul Reitz says they found the dips and angles of the diagrid a serious challenge in analyzing the system's performance. "We relied heavily on computational fluid dynamics (CFD) to determine how air would move on each floor," he says. "Without CFD, the entire system would have been guesswork—and we could have guessed wrong." CFD also enabled clever use of the building's tight site; the space between the preserved six-story facade and the new structure, as well as between the structure and the apartment high-rise to its west, are being used as plenums to move and vent air.

Reliance on such high-tech analysis is increasingly common in sustainable design, and this project has benefitted from a partnership between a world-class architect fluent in technology and an engineering firm that's been intimately involved with the sustainable-design movement in New York City through projects and standards-setting. "I'm hard-pressed to find a firm that cares about the details more than they do," says Reitz of Foster's staff, who express the same sentiment about their partners. That trust has proven necessary to achieve any measure of success with green building.

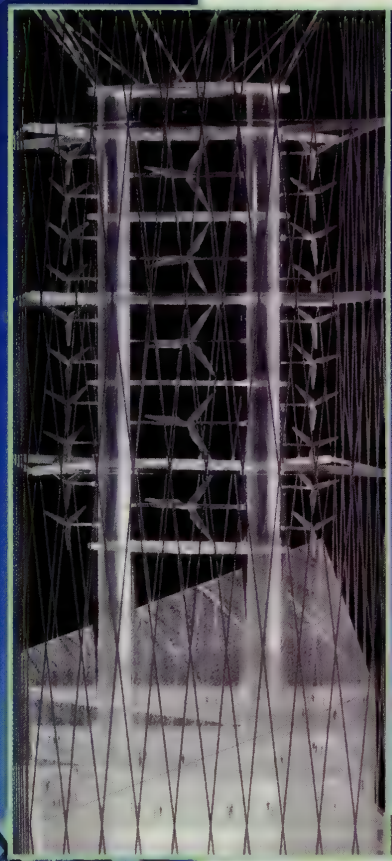
A tower powered by wind

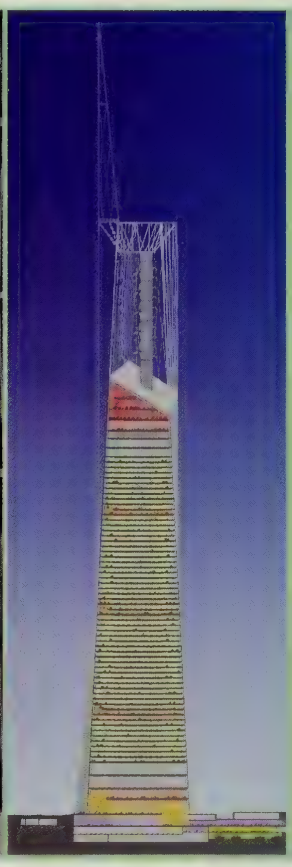
If all goes as planned, the most scrutinized high-rise of our time will be the first in the world to harvest wind. Last year, London engineering firm Battle McCarthy was tapped to design an integrated wind-turbine system for the Freedom Tower. The firm has worked on similar schemes for other buildings, but none have been realized.

Though turbines are a well-developed technology, concerns about noise, vibration, and safety have kept them off buildings in densely-populated areas. That will change. "Wind turbines make sense particularly for tall buildings, where you don't have to pay for the structure to put them up," says Guy Battle, principal of Battle McCarthy. Engineers are finding ways to make them quieter, he says, and despite common perceptions, there's little risk that turbine blades will fly off or dismember birds in midflight.

DEVELOPERS WHO ONCE ASKED "WHY BOTHER?" ARE NOW SAYING "WHY NOT?"

It's unclear whether architect Skidmore, Owings & Merrill will pursue LEED certification for the Freedom Tower, but the firm





Freedom Tower
Battle McCarthy is designing an integrate wind-turbine farm to top the world's most scrutinized skyscrape Preliminary estimates indicate the turbines could provide as much as 10 to 15 percent of the building's energy demand. Other sustain able amenities are typical of those in othe high-rises: rainwater capture and reuse, us of recycled-content an low-VOC building materials, and recycling of debris during construction.

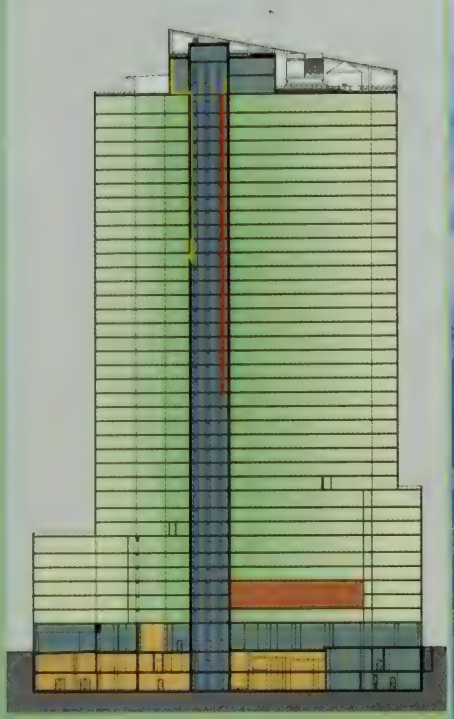
maintains that LEED criteria are guiding the design. More green towers can be expected to rise in lower Manhattan, too: Following Battery Park City's lead, sustainable design guidelines have been drafted, and developer Silverstein Properties is seeking a new type of LEED certification for the exterior structure of Seven World Trade Center, slated to open in 2005. The core-and-shell LEED program was established in 2003 to encourage sustainability for developer projects built on spec, a market several times larger than that of owner-occupied buildings. A companion program, LEED for Commercial Interiors, will allow tenant fit-outs to be certified as well.

Greening the sky-high home

It was just west of the WTC site, in Battery Park City, where sustainability took root. Last year, the Solaire became the first residential high-rise completed under the neighborhood's green guidelines; now a second tower, also designed by Cesar Pelli & Associates, is under construction at 211 Murray Street. The new building will share a blackwater treatment system located in the Solaire's basement. Treated water from both buildings will be used as makeup water for cooling towers and will feed clean water to a nearby park.

Similar projects are underway in Battery Park City, and now neighborhoods like midtown and Hell's Kitchen are building green residential towers even in the absence of mandates. The first to open will be The Helena, a 37-story tower on West 57th Street, designed by Fox & Fowle and expected to achieve LEED gold.

The Helena
Fox & Fowle Architects's 580-unit tower sits on the Hudson River at West 57th Street, an area undergoing explosive growth in residential construction. The building will be the first voluntarily sustainable residential high-rise in New York, but others planned throughout the city will soon follow. It is expected to achieve a LEED gold rating, with features including a green roof and gray-water recycling.





Green residential high-rises might be even hotter than the commercial market in New York. "There are bigger opportunities for implementing sustainability in residential tall buildings," says Gary Pomeranz, senior vice president of Flack + Kurtz. "People don't interview for a job and wonder, 'What's the air quality like in here?' But when they're looking for an apartment, they want clean air, clean water—and they'll pay extra for those amenities." That's proved true at the Solaire, where rents have averaged about 10 percent higher than at conventional buildings.

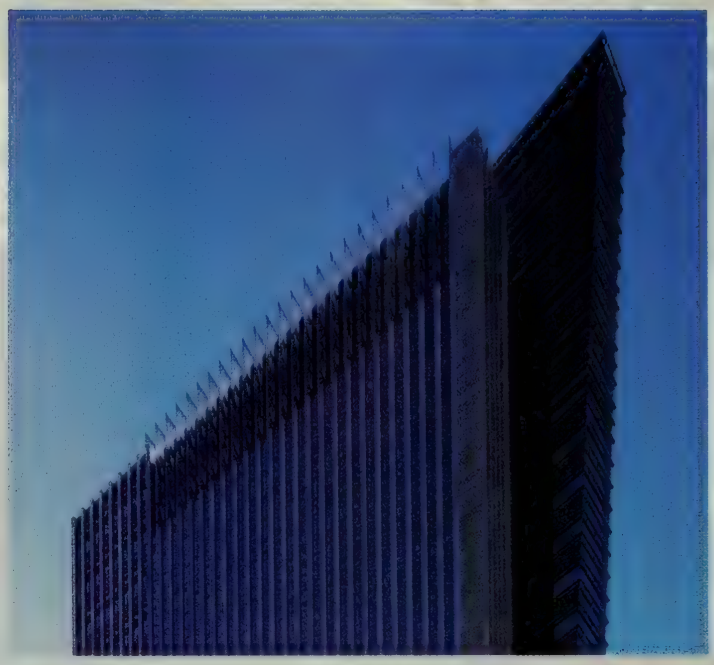
Beyond ratings and ribbon-cuttings

Accolades aside, the true test of sustainability will begin when the dust settles at these construction sites. Any building can be operated inefficiently, and this is especially true of large structures with complex systems, multiple tenants, and mixed uses. Each of these towers will be fully commissioned before opening to head off operating problems, and developers like the Durst Organization have even been successful at securing grant funds from NYSERDA and other agencies to periodically test and commission their existing buildings. LEED also aims to correct this situation by requiring projects to be reevaluated after five years to maintain their rating.

Though even American architects agree they lost ground to designers bound by higher energy prices, "the U.S. has been taking cues from high-rises in Europe and Asia, particularly in curtain-wall design, for efficiency," says Paul Katz, principal at Kohn Pedersen Fox in New York, which is building multiple high-rises in Shanghai and Hong Kong. Future U.S. projects will see even more melding of architecture and engineering to meet sustainability goals through formal means, and the most innovative examples might occur outside New York. "The city's zoning laws are based so much on the street grid that they're totally contrary to green design. They almost predetermine form and orientation," says Fowle.

But for now, the Big Apple's green towers represent the best in U.S. practice. And they point up the growing influence of LEED and local sustainability mandates, despite the inevitable limitations and flaws of such criteria. Peer pressure helps too. As one Manhattan developer put it, "It would have been nice to have been the first to build this way, but that's okay—we'll just set higher goals the next time." Exactly. ■







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TALL TALES

THE STORIES OF A FEW CLASSIC SKYSCRAPERS THAT WERE NEVER BUILT TELL US MUCH ABOUT WHAT MOTIVATES ARCHITECTS, AND THEIR CLIENTS TOO.

Architecture critics nearly always cite a handful of unbuilt skyscrapers as the best of the type, neglecting the vast majority of completed ones entirely. That begs the question, what is it about working in the tall building genre that propels architects to produce such interesting work? It could be any number of things, from the most fantastic wish to be free of gravity's limitations and to soar, to the more down-to-earth wish to build cities that make a rational use of the land. In the following pages, we've recounted the stories of nine of these iconic but unbuilt structures. Some were theoretical and never meant to be built. Others ran headlong into conflict, everything from community opposition to world war. Still others were ready for construction but were scuttled because the numbers didn't work, or worse, because their intended market experienced a catastrophic reversal. Those factors, however, have hardly ever slowed designers down, for in the end you can't get past the fact that something tall is nearly always something big—and inspired skyscrapers have always been just the thing to flatter vain, money-encumbered clients. They, in turn, have often been just the type to ask that the work be done on the cheap: "You only had to draw the floor plan once, right? So cut your fee." The opportunity is so magnetic that many an architect has been willing to do just that. *Charles Linn, FAIA*
Stories by James Murdock



Friedrichstrasse Skyscraper Competition
Ludwig Mies van der Rohe
Berlin, 1921

Mies's design for the 1921 Friedrichstrasse Skyscraper competition incorporated what was a novel concept at the time. He proposed cladding his 20-story building in glass to create what architectural historian Dietrich Neumann has described as a "shining cliff." To maximize space at the site, a triangular plot of land in Berlin, Mies's design called for three towers, each shaped like the tip of a spear, joined by a central core. This unique building envelope enclosed 753,000 square feet of floor space. Its high ceilings and liberal use of glass also allowed light to penetrate deep into the center of the building. Mies's proposal was passed up in favor of a more conservative design, but the winning entry was left unbuilt because of Germany's economic troubles in the years after World War I. Mies nevertheless continued to refine his proposal, and his vision of a glass curtain wall inspired architects designing tall buildings in Europe and abroad.

Chicago Tribune Tower Competition
Adolf Loos (below), Eliel Saarinen (right)
Chicago, 1922

Entries for the Chicago Tribune's headquarters design competition, held in 1922, ran the gamut from staid to crass, and even included work that might have been called Postmodern had it been designed in the 1970s or '80s. Although the winning entry was a Neogothic structure by Raymond Hood and John Mead Howells, the competition led to a consensus that the design vocabulary of skyscrapers should be Modernist. Eliel Saarinen's entry, which won second place, helped cement this accord and was praised by the "father of the skyscraper," Louis Sullivan. In comparison to Hood's elaborate facade, Saarinen's was spare and dominated by vertical lines of fenestration. It helped popularize the use of setbacks and tapered facades. Adolf Loos's entry was a 21-story Doric column, clad in polished black granite. Historians are unsure whether Loos meant it as a joke, but if so, critics failed to see humor in it. Given that Loos eschewed ornament, it is ironic that his building can be read as a giant decoration. Some critics have suggested Loos was seeking to emulate the starkness of an obelisk.



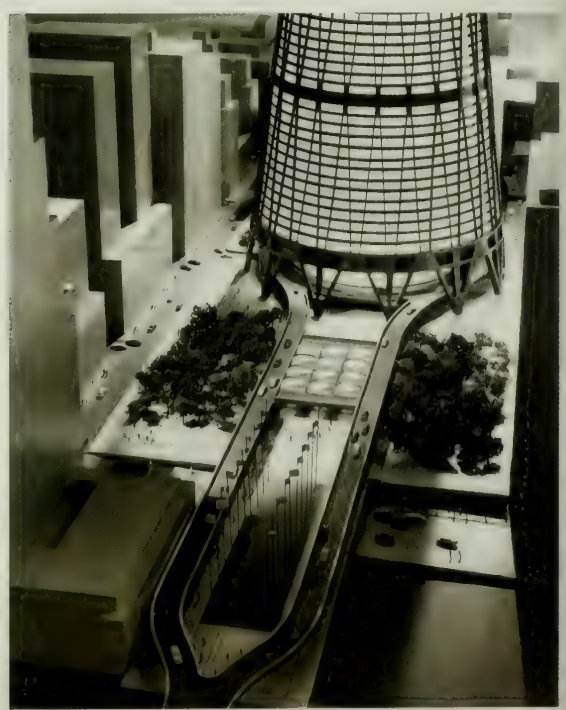


Office Tower at Grand Central
I.M Pei
New York, 1956

Developers began seriously exploring the idea of building a skyscraper above Grand Central Terminal in the early 1950s. The idea for a skyscraper on the site, though, had been actually around since the Beaux Arts terminal was completed in 1913. Its architects, Reed & Stem, proposed their own tower which would have elegantly straddled the terminal's main passenger hall.

Working for developers Webb & Knapp, I.M. Pei proposed an 80-story tower with a circular footprint and, thanks to a taper halfway up the shaft, an hourglass profile. Its facade was crisscrossed by structural supports; overall the building resembled a bundle of sticks. At the base of Pei's building, and again in its upper levels, the floors were left open and the structure was left exposed. Grand Central Terminal would have been demolished to make room for the tower, just as Penn Station was demolished a few years later to make room for Two Penn Plaza and Madison Square Garden.

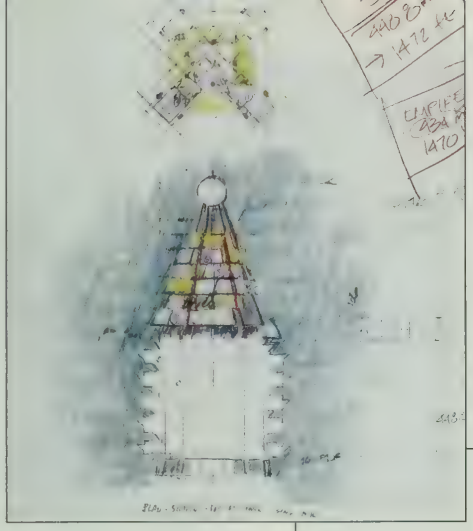
Although Pei's design was passed up, the idea for a Grand Central skyscraper remained. In the late 1960s, the terminal's owner sold the air rights to developer UGP Properties, which hired architect Marcel Breuer. By this point, however, the terminal had been designated a historic landmark, and with support from the nascent preservation movement, the Landmarks Commission rejected Breuer's design. However, a skyscraper was built north of Grand Central Terminal: the Pan Am Building (now the Met Life Building), completed in 1963. This high-rise has been said to be the one New Yorkers would most like to see demolished, because it obstructs Park Avenue's view corridor and dwarfs nearby buildings.





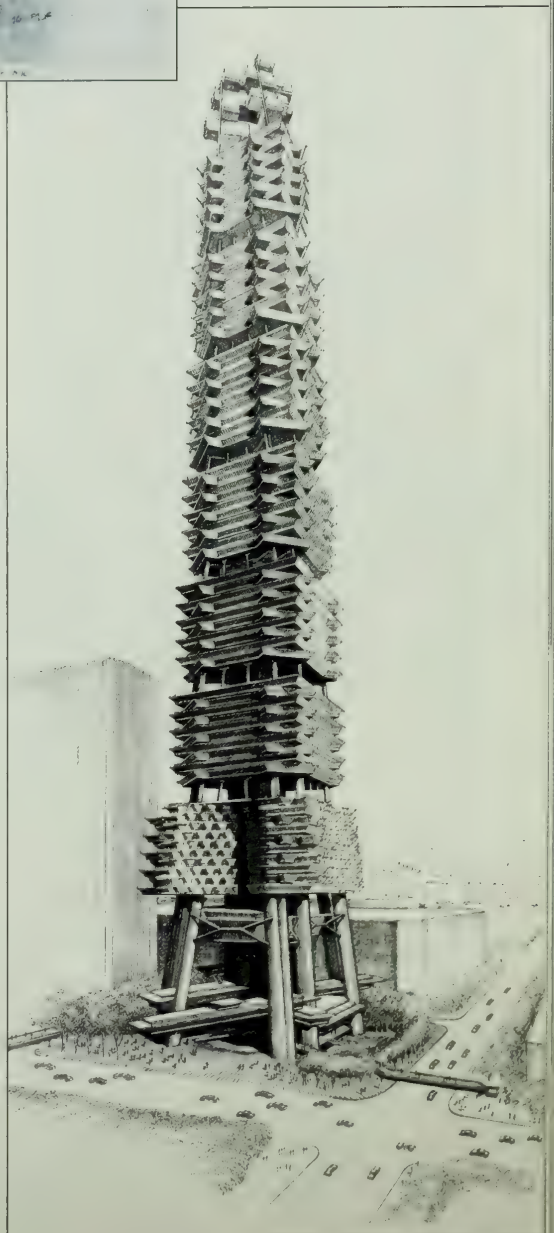
Mile High Illinois
Frank Lloyd Wright
1956

Frank Lloyd Wright intended his Mile High Illinois skyscraper to be the focal point of Broadacre City, the theoretical city, he began planning in the 1920s. Because the Broadacre project was an exploration of horizontal space, a one-mile-high skyscraper might at first seem out of place—but by the 1950s Wright had decided that some cities were "incorrigible," and that even Broadacre City could use a tall building as a cultural and social hub. The foundation of Wright's building was a massive column, shaped like an inverted tripod, sunk deeply into the ground. This supported a slender, tapering tower with cantilevered floors. In keeping with his belief that architecture ought to be organic, Wright likened this system to a tree trunk with branches. He planned to use gold-tinted metal on the facade to highlight angular surfaces along balconies and parapets and specified Plexiglas for window glazing. Inside the building, mechanical systems were to be housed inside hollow cantilevered beams. To reach the building's upper floors, Wright proposed atomic-powered elevators that could carry 100 people.



Sino Tower
Paul Rudolph
Hong Kong, 1989

Paul Rudolph's winning entry for the Sino Land Company's skyscraper competition has been described as the realization of his search for a formal expression in a tall building. Taking a cue from the Eiffel Tower, the Sino Tower was framed by four massive columns that sloped upward from a splayed base. The first 150 feet of this 90-story structure was mainly open, though crisscrossed by pedestrian sky bridges and retail shops. Above this space was a "sky lobby" for a 200-room hotel, and above that were eight blocks of 10 floors each that contained the hotel as well as office space. These eight blocks were separated by open floors that housed mechanical systems and served as areas of refuge, a fire code requirement. A cluster of forms at the building's apex that contained mechanical systems was to be sheathed in silver leaf. During the 1960s, when Rudolph was among the leading proponents of Modern architecture, he experimented with the "plug-in" city—an urban system in which residential, commercial and other uses could be contained in moveable units connected to a central service core. His Sino Tower embodied many of these ideas.

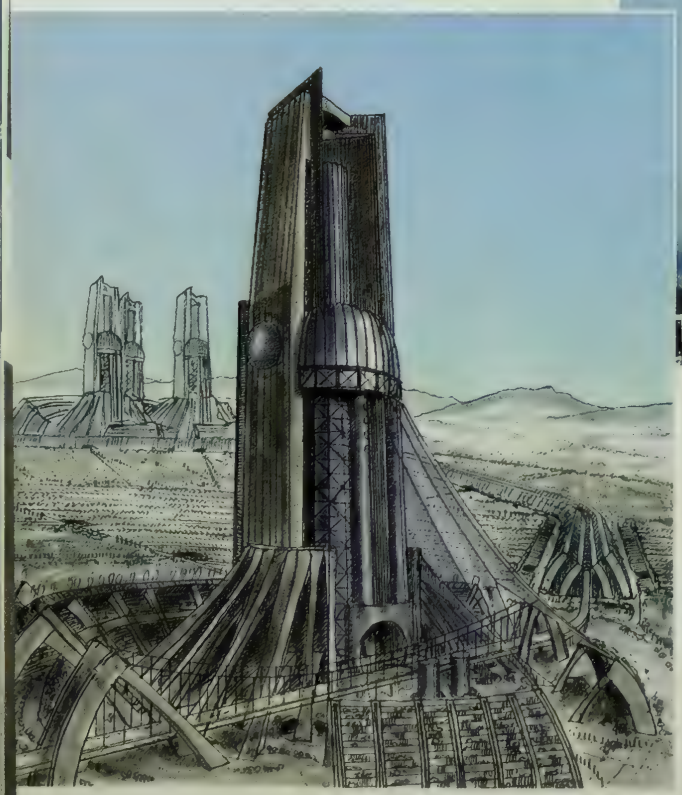


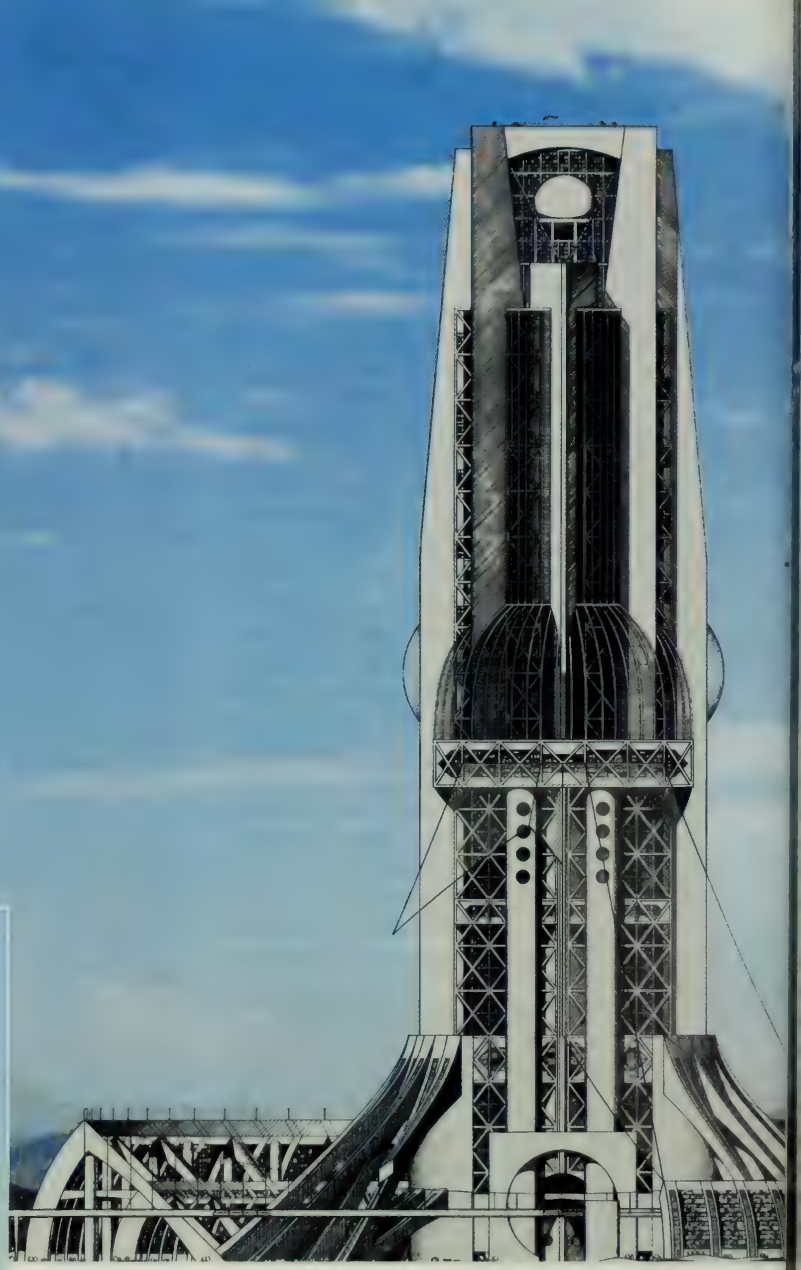
Hyper Building
Paolo Soleri
Mojave Desert, 1996

In 1996 the Japanese Ministry of Construction and Culture sponsored a competition for the design of the "Hyper Building," a structure capable of housing 100,000 people that was to stand for 1,000 years. Three architects were invited to participate: Rem Koolhaas, Nobuaki Furuya, and Paolo Soleri. The competition's intent was to produce a building that would rein in urban sprawl, be capable of generating and recycling its resources, and reduce environmental damage. Soleri proposed a 1,000-meter tall structure with a footprint of one square kilometer, flanked by two "exedrae" or semicircular structures.

Soleri's described his Hyper Building as a vertical "arcology," a term he invented to describe the merging of architecture and ecology. He sited his Hyper Building in the Mojave Desert between Los Angeles and Las Vegas, cities he believes symbolize contemporary society's penchant for consumption and hedonism. It played on these cities' sense of artifice, incorporating a virtual-reality recreation park and using climate controls to simulate seasonal changes.

The project was halted due to Japan's economic crisis in 2000.









7 South Dearborn
Adrian D. Smith and William F. Baker
Skidmore, Owings & Merrill
Chicago, 1998

If it had been built, 7 South Dearborn's 108 stories of communications facilities and antennae would have been the world's tallest building, a remarkable achievement given that the skyscraper's footprint occupied only one-quarter of a city block. It was supported by a rigid interior spine: a 67-square-foot hollow mast of reinforced concrete, surrounded by eight mega-columns. The mast allowed column-free floor plates and provided a base from which the building's upper three sections could be cantilevered.

The tiny footprint meant that 7 South Dearborn contained just 1.9 million square feet of space, less than many shorter buildings. The building's lower 50 stories contained office space, while residential space and communications facilities occupied the upper floors. SOM's design called for an outer skin of aluminum and stainless steel, which made it seem as though the entire structure was a communications tower—and indeed the twin 450-foot antennas were intended to be the building's main revenue source. Although there was supposedly a need for communications towers in Chicago during the telecom boom of the late 1990s, the project fell victim to the tech-market crash and real estate downturn that hit commercial developers in 2001.





New York Times Tower Competition
Frank O. Gehry, Frank O. Gehry & Associates and David Childs, Skidmore, Owings & Merrill
New York, 2000

The architects' entry was a 1.5-million-square-foot, 45-story glass tower that presented a swirl of facades that, at street level, resembled a folded copy of the *Times* caught in the wind. As the building rose, the form resolves into a more rectilinear shaft, with leasable floor plates. At its apex, the building erupted into peaks inspired by the *Times*'s calligraphic masthead font. The duality between calm and chaos they created allowed the building to conform to the street grid, while also carving out a unique identity on the skyline. It has been said that the collaboration between Gehry and Childs was strained, but for whatever reason, the team withdrew its design just weeks before the competition concluded. The commission went to Renzo Piano Building Workshop and Fox & Fowle Architects, whose design is under construction.

EcoTower
Ken Yeang, TR Hamzah & Yeang
London, 2000

When architect Ken Yeang said his design for the EcoTower was intended to create a "suburb in the sky," he meant something similar to the garden suburbs that would have been familiar to Beaux-Arts planners a century ago, not the suburban sprawl identified with strip malls and ranch houses.

The EcoTower actually comprised two towers, one rising 459 feet and the other 240 feet. It would have contained 300,000 square feet of residences and gardens. This green space, which was to occupy 20 percent of the building, is more than just an amenity for tenants. In keeping with Yeang's bio-climatic design principles, the gardens were designed to shade various parts of the building and to allow efficient wind circulation. The EcoTower's orientation, moreover, would also allow it to maximize passive solar energy gain.

Yeang's building was intended to be the capstone of a 180-acre redevelopment project in the Elephant and Castle district of south London. Construction was slated to begin in 2002. The project stalled when the developer, Southwark Land Regeneration, failed to win financial support from the local city government.



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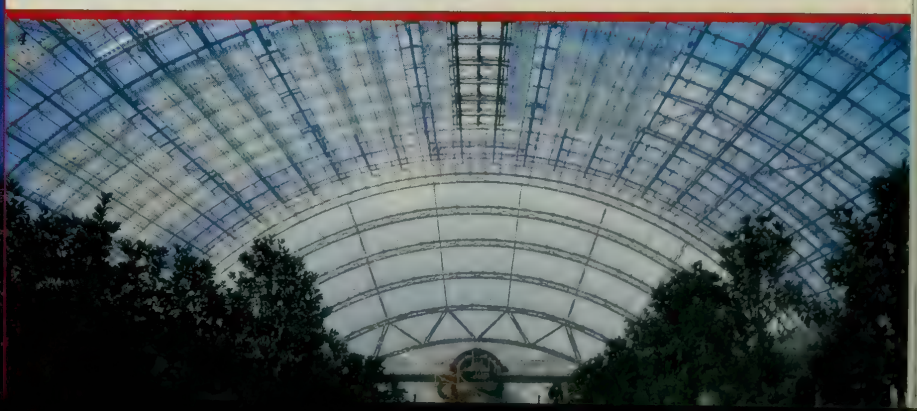
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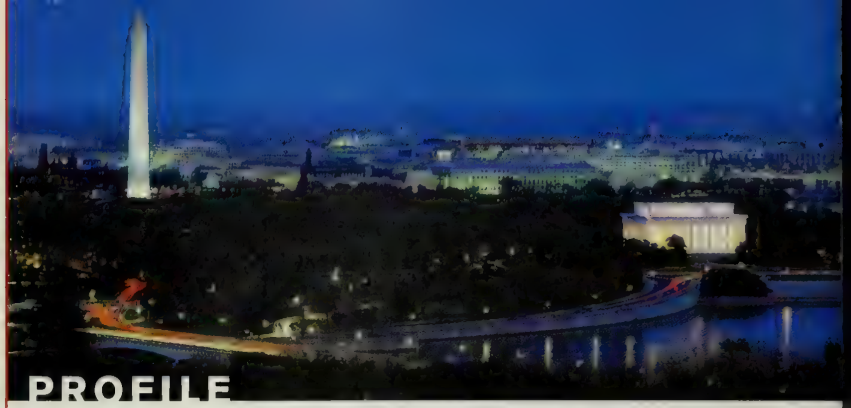
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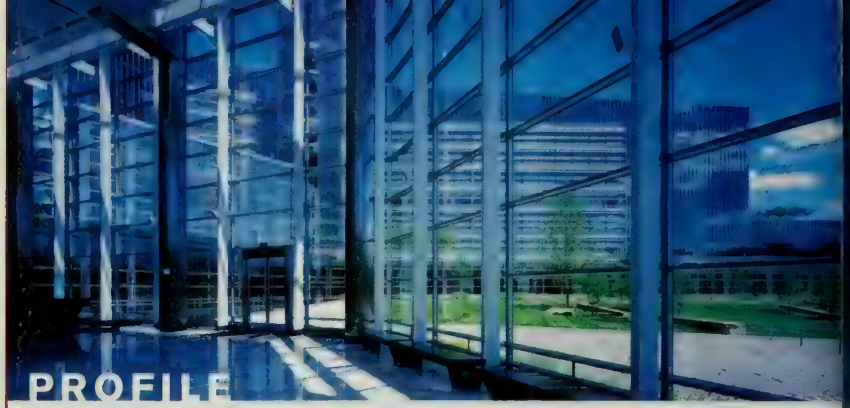
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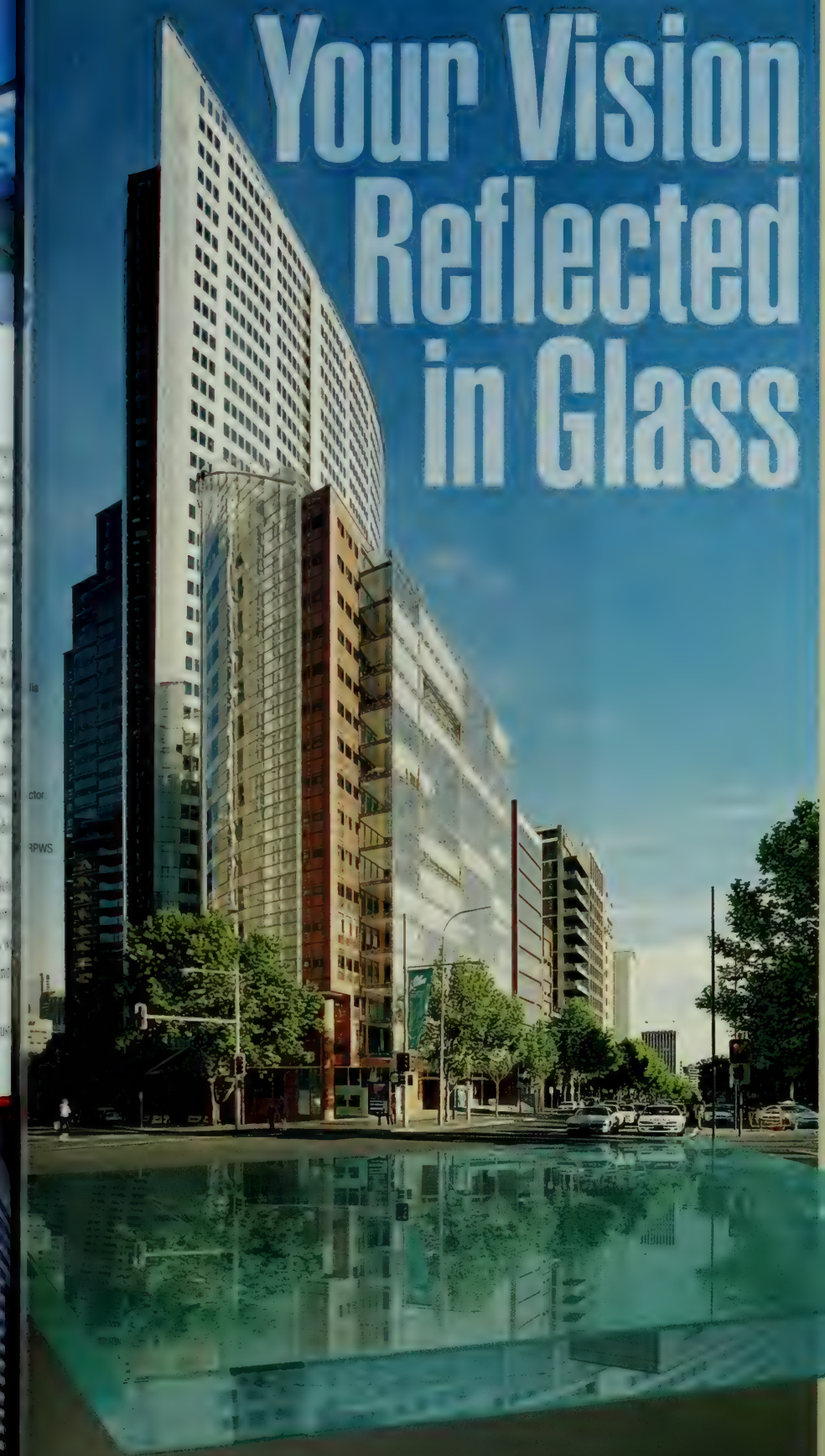
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The latest elevator technologies give tall buildings an IQ boost

ELEVATOR MANUFACTURERS ARE APPLYING GUIDANCE SYSTEMS RUN BY ARTIFICIAL INTELLIGENCE AND OTHER TECHNOLOGIES TO GET PEOPLE AROUND MORE EFFICIENTLY IN INCREASINGLY TALLER BUILDINGS.

By Alan Joch

If you yearn for elevators that can get you to your high-rise destination faster, the future looks bright. In the past, seasoned elevator riders employed two common tactics: guessing which car would open up next and positioning themselves accordingly, or the futile act of endlessly punching the button to induce the elevator to move more quickly. In reality, neither of these techniques alleviated the rider bottlenecks that build up in high-rise lobbies during peak traffic times.

Fortunately, the latest elevators have an answer to elevator gridlock. New technologies such as artificial intelligence (AI), genetic algorithms, and fuzzy logic (a technology employed by AI enabling computers to make calculations based on approximations or trends rather than absolute data), now control traffic management systems in leading-edge elevators and may finally accomplish what inveterate button pounding never could.

A number of major elevator vendors offer their own versions of high-tech guidance systems that use cyber-smarts to load elevator cars by grouping people going to similar areas in a tall building, rather than letting them randomly select cars themselves. Vendors concede that lobby wait times may be longer as these systems shuttle people to designated cars to optimize arrivals and departures. But the total time it takes to reach upper floors decreases. "In heavily populated buildings or buildings with multiple elevators, it groups people together so traffic is more organized and an elevator makes fewer stops," says Sula Moudakis, director of high rise business in North America for Schindler Elevator.

Even more important, greater traffic efficiency may have farther reaching benefits, including decreasing the number of elevators needed to move a tall building's traffic, thereby saving costs and opening up additional occupancy space.



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Queue Control

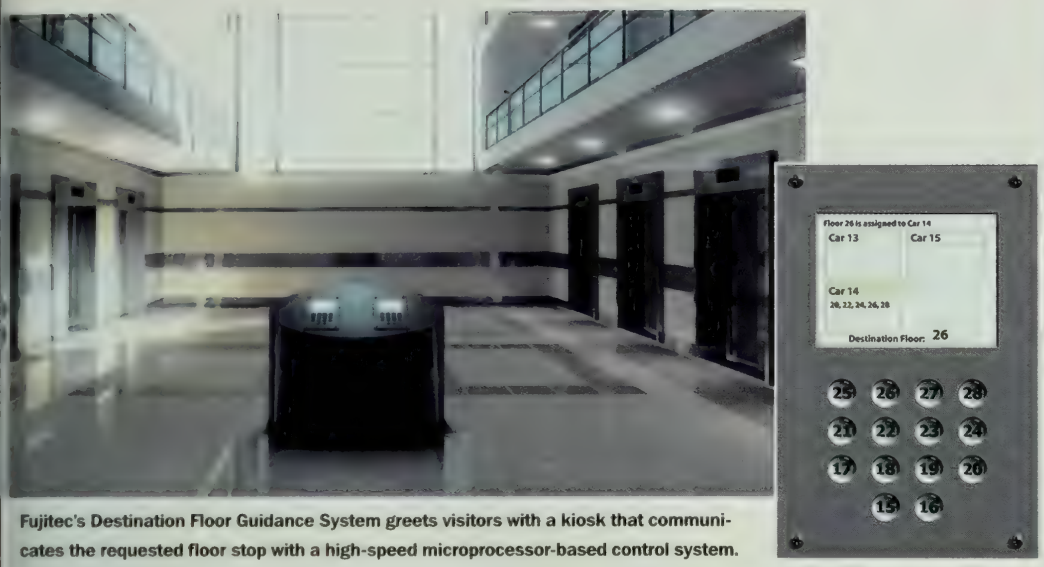
Without traffic guidance systems, tall buildings are vulnerable to queuing, a condition that produces frustration among occupants while they wait for available cars and after they jam into one, says Johannes de Jong, director of products for Kone Inc. "Because they come into cars at random, riders end up stopping at practically every floor," he explains. "And that means it's going to take a long time to come back to the lobby to pick up the next group of people." Which leads to more queues, he adds. If, however, people with similar destinations ride in the same car, the number of stops the elevator has to make decreases significantly. "If you do that, people get around quicker and your elevators can transport more people."

With the new systems, riders log in their destination at central lobby kiosks and the guidance programs use this information to determine which cars and how many of them will travel to specific floors. An LCD display directs riders to the proper elevator. Once inside the cars, passengers don't have to re-enter their floor destination.

Guidance systems for optimizing car loads aren't new; rudimentary versions have been around for over a decade. What's new today is the higher levels of intelligence, and, theoretically, efficiency with which the guidance systems operate. AI-based traffic control systems bring additional smarts to the job. Encoded in their circuitry is the ability to constantly evaluate traffic volumes and patterns as they change during different times of the day and to measure how long it's taking the system to move people to each floor.

By constantly monitoring traffic flow, the systems become savvier about allocating cars and grouping passengers. "The system

Alan Joch is a freelance business and technology writer based in New England.



Fujitec's Destination Floor Guidance System greets visitors with a kiosk that communicates the requested floor stop with a high-speed microprocessor-based control system.

is able to consider historical information to learn the traffic variances in a building," says Joe Rennekamp, vice president of engineering for Fujitec America. "The system knows at such and such a time there will be a peak in traffic, and at another time there will be a downturn." Over weeks and months, an AI-based system can draw on these patterns to learn the characteristics of the particular building to become increasingly efficient at moving people around.

The lobby-based elevator touch screens can perform other duties as well. Passengers can view onscreen directories to select a tenant without knowing the floor number. Authorized building personnel can punch in special codes to designate cars for different types of service, including temporarily commandeering a car for freight service, for example. Riders with physical disabilities can tell the system to hold a car's doors open longer than normal or load the car below its usual capacity to accommodate the extra space taken up by a wheelchair. Some systems also cater to special passengers. By punching in a special code, a senior corporate executive can take a solo express ride to the top.

In the future, special codes combined with identity management systems will be used to restrict access to upper floors to increase high-rise security, Moudakis adds.

Fujitec America, Kone, and Schindler say they've all developed their own guidance systems. The AI applications run on business-class server computers. The systems work best with taller buildings, those with at least 10 stories and three or more elevators. AI-based traffic control adds about 15 percent to the total elevator system cost, says Moudakis.

THE SYSTEMS WORK BEST WITH TALLER BUILDINGS, THOSE WITH AT LEAST 10 STORIES AND THREE OR MORE ELEVATORS.

Less Is More

While vendors agree that rider optimization systems increase the overall handling capacity of a tall building's elevators by about 30 percent, not everyone agrees on what to do with this extra capacity. "In Europe, where rental rates are extremely high, control systems increase efficiency so that you need fewer elevators," says de Jong. This translates into "a dramatic increase in extra rental space," he adds.

But others say the extra capacity is best for temporary capacity spikes rather than for day-to-day service. "We did some studies and decided that the real benefits are in managing high traffic," says Frank Dugan, director of special projects for Fujitec America. Moudakis concurs. "If you take an elevator out of service for maintenance, you can still service the building with the remaining elevators," she says.

The guidance systems, which can be retrofitted onto existing elevators, are also impacting modernizations, especially in buildings whose populations and traffic levels have reached higher volumes than what the original designs anticipated. "Rather than being stuck with elevator systems designed 50 years ago, you can take the same elevators and increase their capacity [with the guidance systems]," Moudakis believes.

Elevator companies say rider optimization systems will blossom in the U.S. as builders of new high rises, including the New York Times corporate headquarters in Manhattan and the 48-floor Hyatt Center in Chicago, adopt these technologies. But the U.S. market is playing catch-up with Europe and Asia, where AI-guided elevators are more common in tall buildings. "Originally, we felt it would work best for single tenant buildings and we focused on that market," Moudakis says. "Then, as we used it in new installations and modernizations, we figured out [the tenant mix] doesn't matter. Passengers get used to the system very quickly." ■

Safety and Efficiency Boosters

A couple of behind-the-scenes innovations are due to arrive in tomorrows elevator's to help make them safer and more efficient. Fujitec America is developing a smoke protection system that seals hoist way doors with rubber gaskets to prevent smoke from shooting up elevator shafts if a fire erupts on a lower floor. By containing smoke to only those areas where the fire burns, the gaskets also keep smoke from moving from floor to floor or to the lobby, which could potentially be used as exit space. The company is working to get regulatory approval to use the gaskets in U.S. buildings and expects them to be available in the first quarter of next year.

At this year's AIA show in Chicago, Kone introduced EcoSpace (below), a traction elevator without a traditional counterweight and the need for a machine room, previously available only in Europe. This can decrease elevator core space by 20 to 30 percent, allowing for more of the buildings interior to be devoted to occupancy space, according to Johannes de Jong, director of products. The company believes traction elevators are more environmentally sound than traditional systems because they require no lubricating oil and consume 60 percent less energy than hydraulic elevators. ***A.J.***



Innovative Products: Sources

Innovations in seismic protection, Page 15

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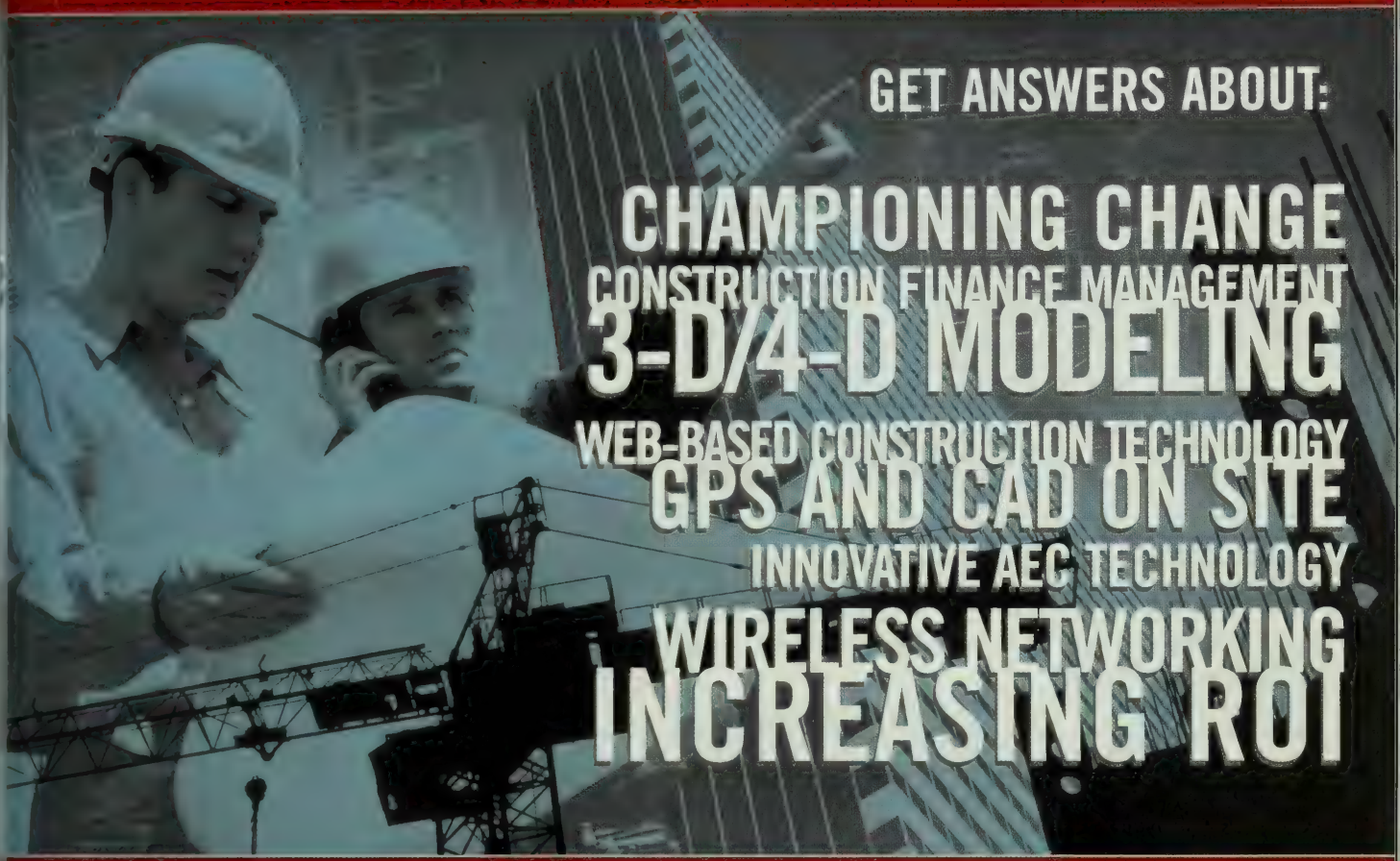
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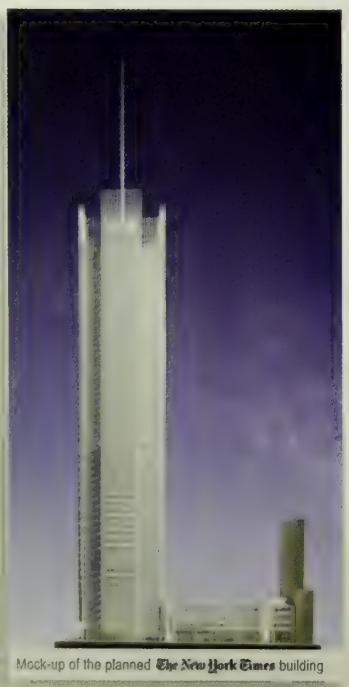
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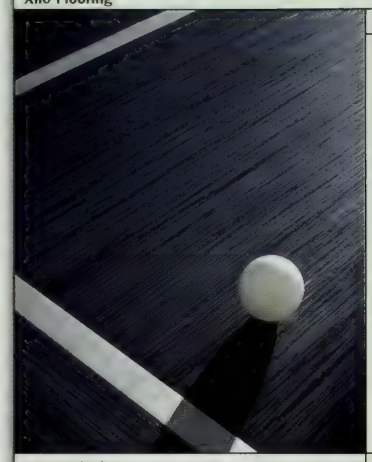
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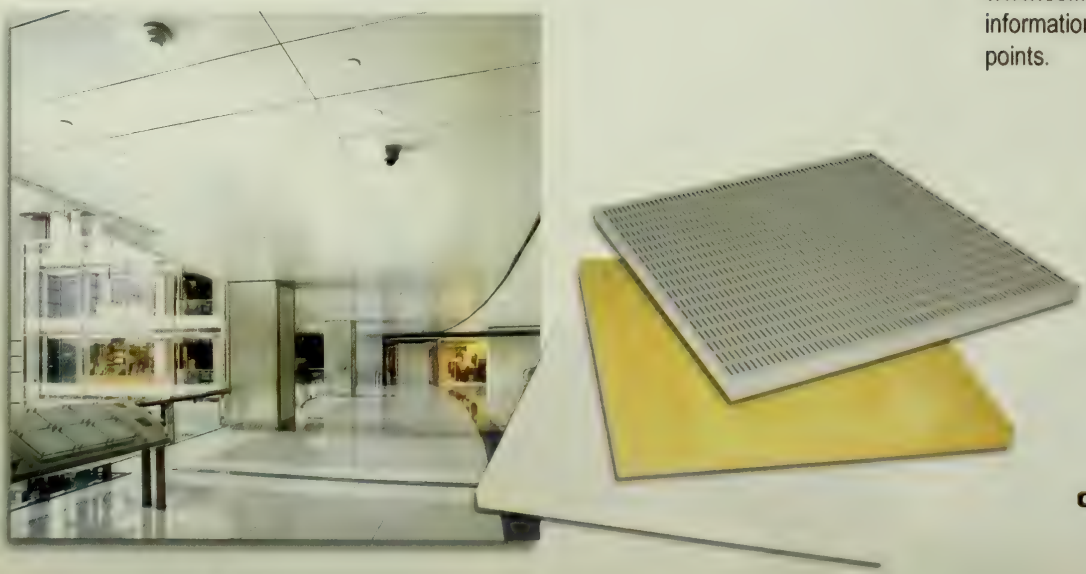
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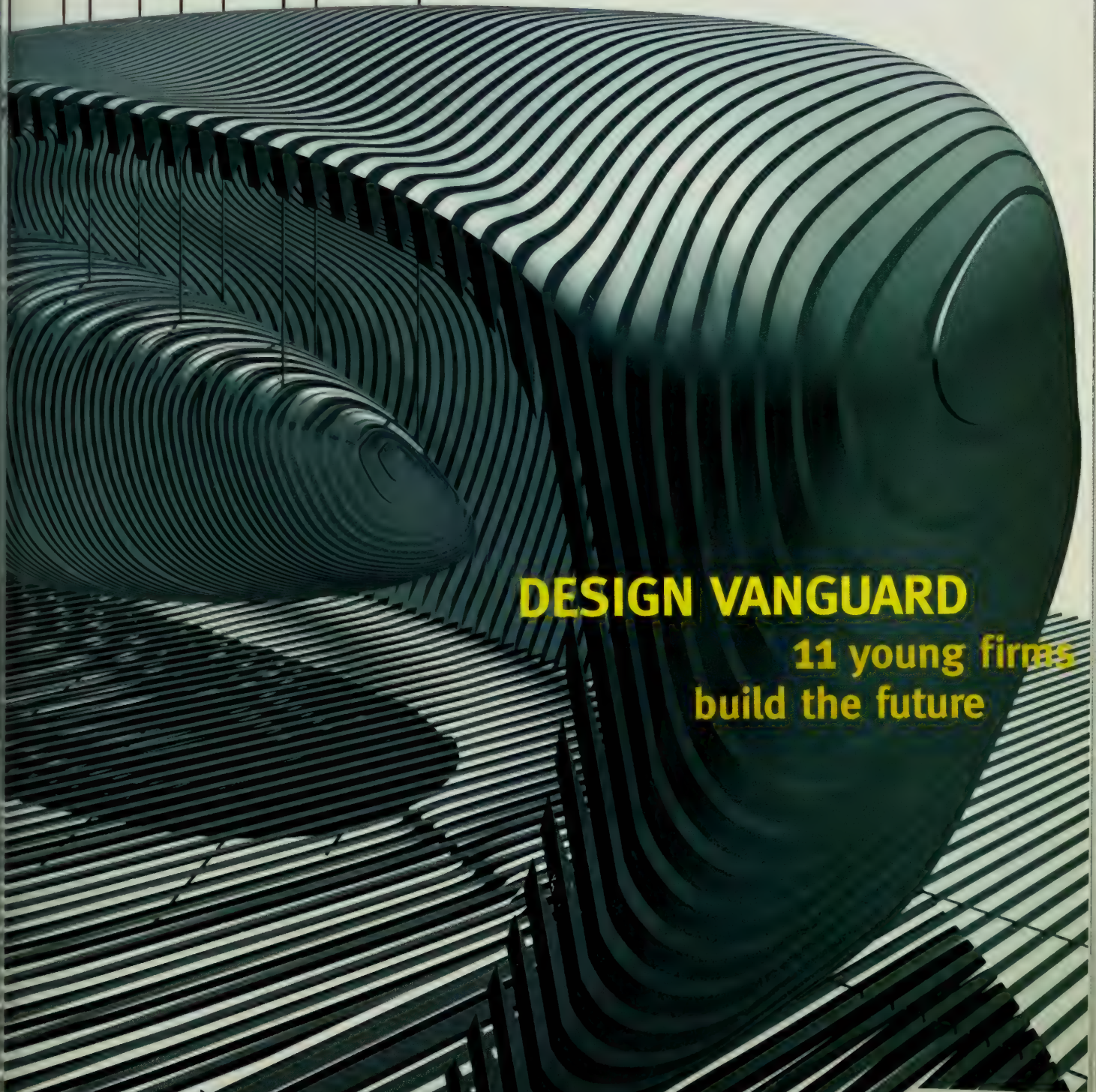
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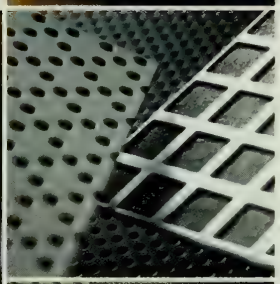
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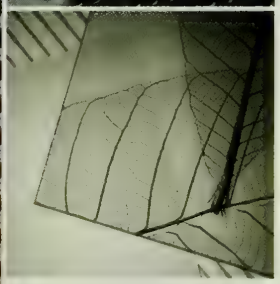
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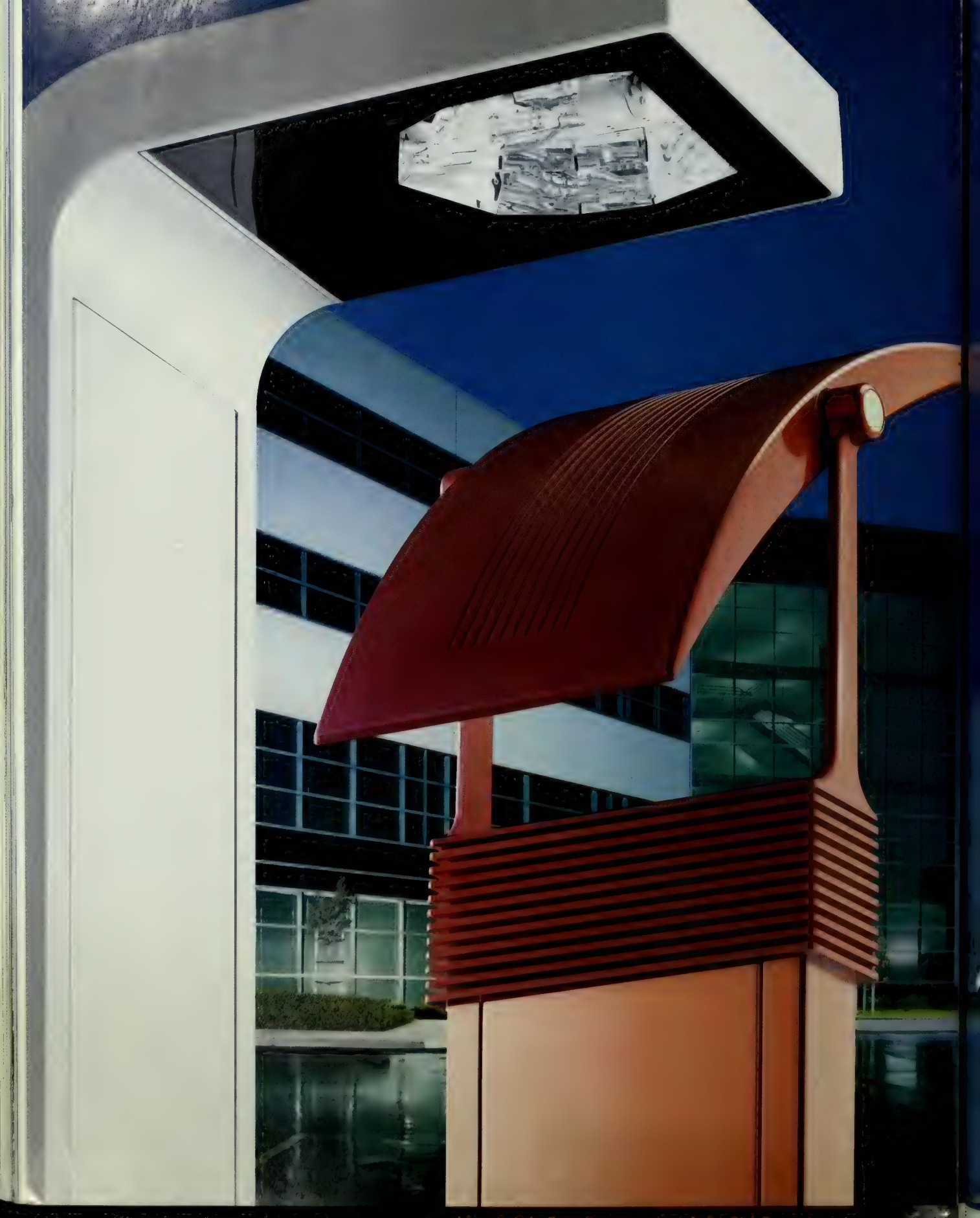


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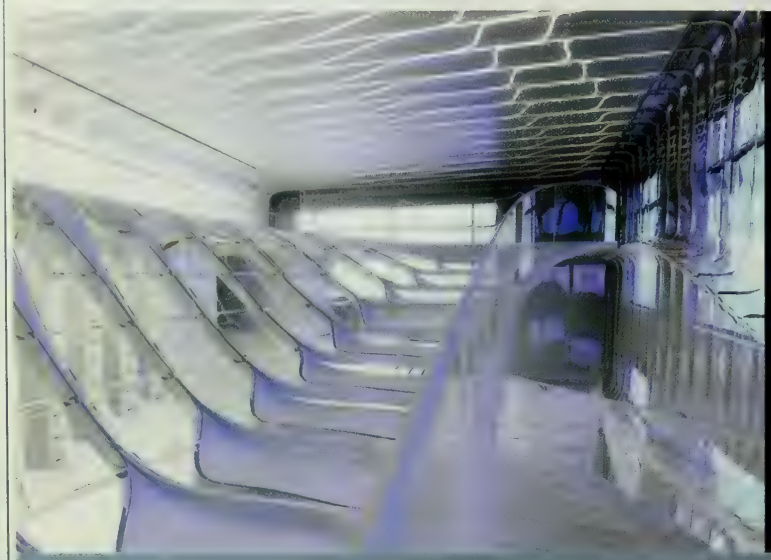
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* You can find these stories at **www.architecturalrecord.com**, including expanded coverage of Projects, Building Types Studies, and Web-only special features.

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Design Vanguard 2004

This year's 11 firms investigate the interrelation of natural and built environments. Hailing from six different countries, from Spain to Korea to Chile, discover the complex designs of these young firms. On the Web, we expand each Design Vanguard architect's coverage with more projects, drawings, and renderings.

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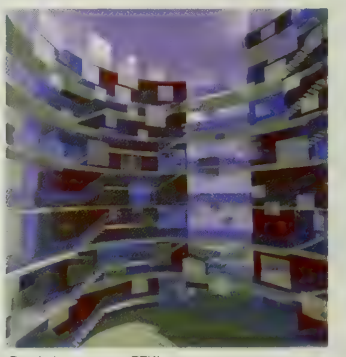
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Products

The 2004 Product Reports are in! Read about the top contenders listed by category on our site. Also, find the best of the best in innovative architectural products in our Editor's Picks.



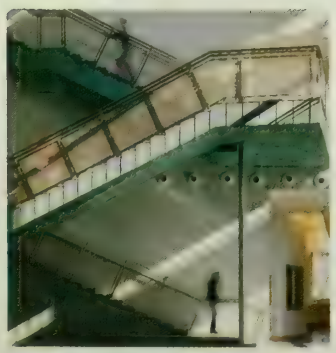
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This month we focus on competitions. Peruse the entries of an interoffice design competition recently held by RTKL and also learn more about an array of competitions that are available to you.

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Shapiro Campus Center, Waltham MA
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Building Types Studies

Architects are enlivening university and college campuses with thoughtfully designed buildings. While we discuss five projects in print this month, we more than double the projects we cover on our Website.

Receive CES Credits Online

This month: Entrepreneurial Curators Seek Innovations. Also, find five additional articles online for Continuing Education credits.

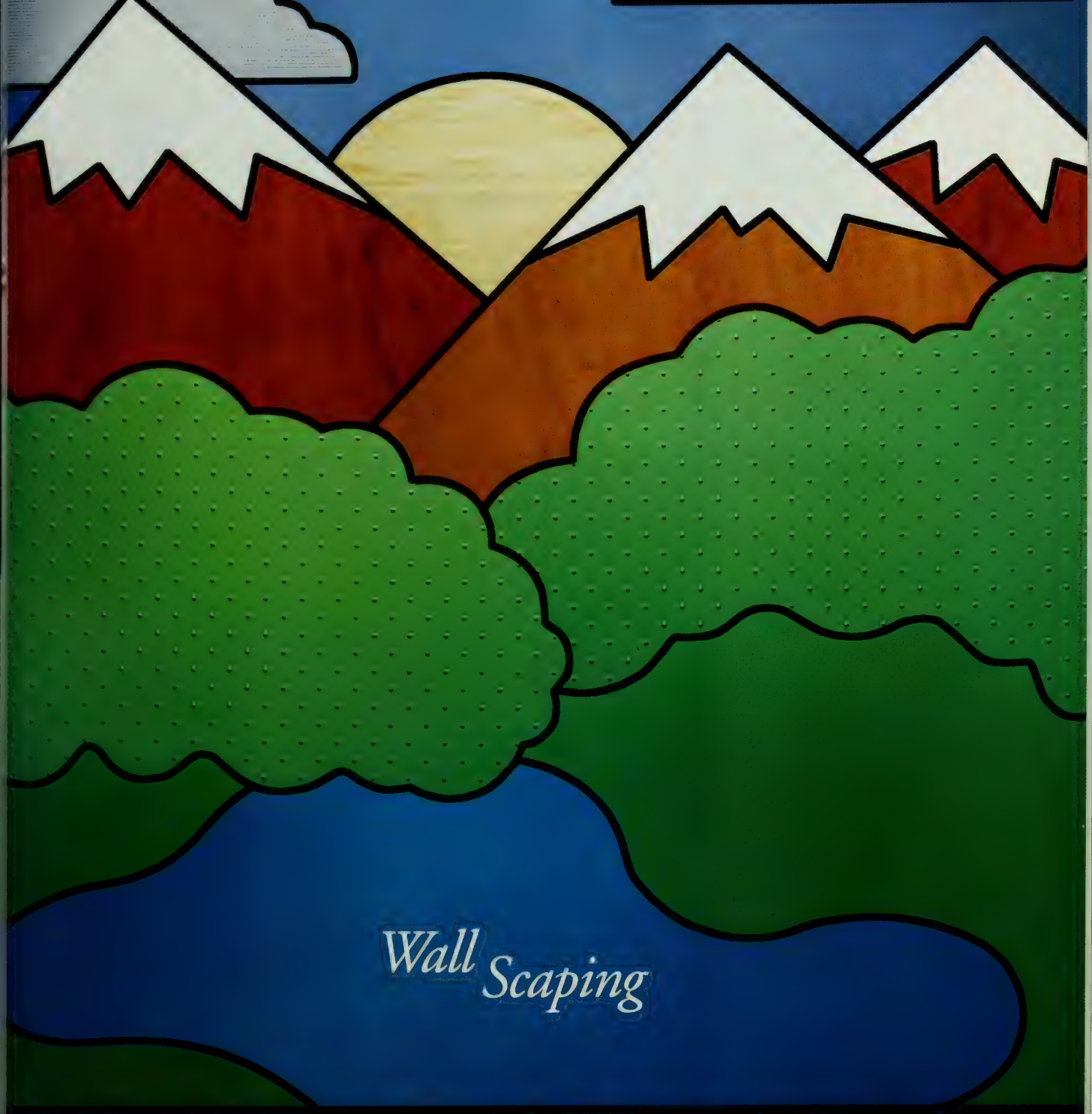
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Thoroughly Modern

Editorial

By Robert Ivy, FAIA

Not all buildings need to shout. If you are a typical reader of ARCHITECTURAL RECORD, you might conclude that most contemporary architecture speaks assertively, even independently of its surroundings. Bold, inventive architecture maintains ascendancy, while finesse or urban fit seem to have been relegated to second-class status. What has happened to the refined, respectful urban solution? New York's recently reopened Museum of Modern Art proves that skill and subtlety are still thriving.

In weaving together a disparate smattering of parts that the Modern had become, including the Philip Johnson and Cesar Pelli additions, the architect, Yoshio Taniguchi, faced formidable obstacles. Initially, he lacked recognition by a star-crazed public; few in the United States knew his work, since the architect had built almost nothing outside Japan. But his patience and tenacity, legendary among his peers, had produced a painstaking body of work, significant for its perfection of detail and devotion to scale and proportion. Taniguchi's work has refined the International Style, forged in Europe (and at the Modern), and honed it to a classic, minimal language that clarifies Modernism. His projects, like the Museum of the Horyuji Treasures [RECORD June 2002, page 90], unfold like origami, offering a procession of sensory experiences in three-dimensional, interlocking space.

His pared-down material palette deepens the architectural dialogue. The list is brief, but pungent: translucent fritted glass; walls of black granite and gray glass; silver anodized aluminum panels; simple white interior walls; green-slate and light-oak flooring. Here, the architect deployed the materials to maximum effect, allowing glass to glow or grounded walls to hunker into solidity.

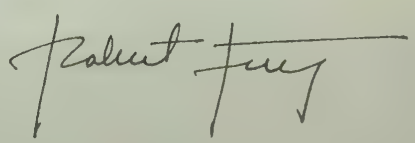
Taniguchi's client, a foremost repository and expositor of the Modern movement, needs no forceful declamation, no statement of identity as have its newer rivals like the Guggenheim Bilbao, in Spain. Instead, the Modern needed significant expansion, coherence of multiple parts, which had grown through the years, and a functional shake-up. The world had shifted since Abby Aldrich Rockefeller's early galleries confronted a new century. Today the Modern's collections and support, unrivaled and superb, warranted a kind of understated hegemony that this new museum would provide.

Blissfully, the Taniguchi design, executed with the skills of the associate architects, Kohn Pedersen Fox, transcends its brief. Visitors now enter and rise to the fifth floor via escalators to commune with Matisse or Jackson Pollock, then descend toward a voluminous atrium, where zooming spaces intersect and project out toward the sculpture garden. From 54th Street, the rising floors offer an urban drama.

Galleries provide intimate moments away from the hype and scale, appropriate to the art they contain. If the largest spaces seem overwhelming for their installations, overall, the Modern seems to resolve the dichotomy between spectacle and privacy outlined in an interview with Victoria Newhouse in this magazine in January 2004 [page 80], offering both quiet and sociability in due measure, all bound within a single, unified plan.

The highest compliment may reside within the visitor's experience. Upon completion of a tour, the art is what remains memorable—the chromatic, glowing canvases or the parametric curve of a bronze sculpture, attesting to a welcome lightness of touch. Few architects today, outside of a handful, including Renzo Piano, would have the confidence to allow the objects contained to outshine the container.

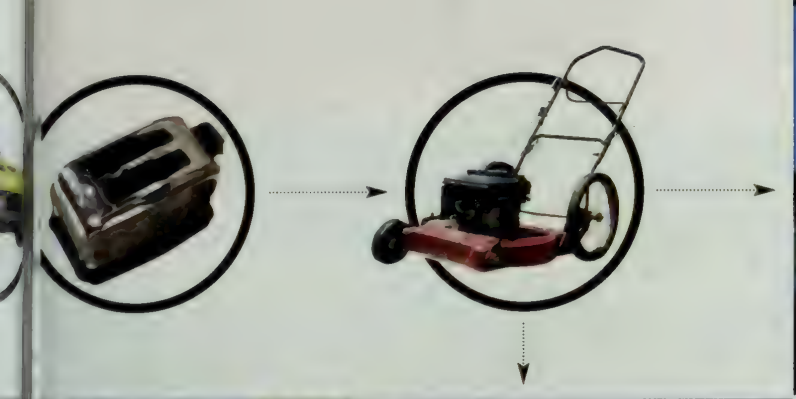
During the recent opening days, some cognoscenti groused about the Modern's apparent lack of "newness" or innovation, as if every structure should advance architecture intellectually or formally. Rather than a theoretical display, today's MoMA represents a culmination, a mastery of idiom that we seldom witness in the United States. Replete with its own ideas, the new Modern's translucent unfolding sets a standard for a new century's ideas, and works of art yet to come.





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Letters

It's what's inside

I was pleased to see the copy that accompanied the image of Daniel Libeskind's Danish Jewish Museum on ARCHITECTURAL RECORD's October cover. I agree the "debate continues" over museum design, and the cover photo says it all: more bombastic architecture from Libeskind preying on art. I no longer feel these solutions are completely driven by the architect. Rather, buildings like this fill a gap in the curatorial mission of some institutions. If a museum can't tell engaging stories with its collection, then it builds a provocative box around it.

Fortunately, the October issue also showcases some redeeming projects. James Stewart Polshek's design for the Brooklyn Museum [page 116] is a wonderful front door, although the museum has significant problems that remain to be addressed (for example, many galleries aren't even air-conditioned). Richard Gluckman's Picasso Museum in Malaga [page 132] seems to be a scheme that lets the curatorial interests and architectural context take precedence. It's a sensible model that is also reflected in Ando's project in Aomori [page 124].

I believe that great architecture and a great museum experience can coexist if those responsible—trustees, museum directors, and architects—remember that these projects are more about the contents than the container.

Ken Carbone
Manhattan

Diversity resolution

Your facetious October Record News headline, "Will Number Crunching Fix Architecture's Diversity Crisis?" [page 40], dismisses the sad reality that after 30 years of minority scholarships, mentoring, programs aimed at attracting underrepresented middle and high school students, and curricular interventions, we have only inconclusive anecdotal data on why our profession still fails to reflect the demographics of the society we serve. Other professions, such as law and nursing, have diversified as they undertake systematic quantitative and qualitative studies to determine who is attracted to their fields, how underrepresented groups fare in professional schools, what happens during internships and the early stages of practice, and why people drop out of professional tracks before becoming licensed.

Architects often speculate that a lack of early exposure to design professionals, low pay, or workplace practices may be driving qualified people of color, women, and those who are physically challenged out of architecture, but we have not self-assessed our practices in a systematic way. Such speculation begs the question of why so many white males are willing to accept the challenges of our profession while others are not. The AIA's Diversity Resolution is designed to bring together all the groups involved with this profession, in order to capture both statistical data (longitudinal "num-



ber crunching") and qualitative information. We invite comments and recommendations through the Diversity listserve on the AIA's Web site. This will enable us to introduce effective and focused programs to address what you rightly call a "diversity crisis" as the world evolves dramatically around us, but the demographics of our profession change only minimally.
Ted Landsmark, Assoc. AIA, M.Ev.D, J.D., Ph.D.
President, Boston Architectural Center
Chair, AIA Committee on Diversity

Steely resolve

I certainly wish to congratulate the concrete industry on the accomplishments highlighted in Sara Hart's article, "Slender, Robust, and Very Tall," in the *Innovation* supplement to the November 2004 ARCHITECTURAL RECORD [page 36].

Concrete certainly has made progress as it seeks to emulate the strength, aesthetic appeal, design flexibility, cost effectiveness, and schedule benefits of structural steel.

Regretfully, the article echoes some misleading assertions of the concrete industry with respect to structural steel. It is critical that owners, architects, developers, structural engineers, and developers make informed decisions based on accurate information, not misrepresentations being spread by representatives of competing systems.
H. Louis Gurthet, P.E.
President
American Institute of Steel Construction

Set and setting

Robert Campbell [Critique, November 2004, page 75], citing lines of Londoners awaiting the opening of Norman Foster's Gherkin, a work of commercial architecture, says, "It's hard to imagine that kind of interest … in the U.S." Perhaps, but on April 22, 1939, 26,000 people (over one third the population of Racine, Wisconsin, where the work was located) waited for two hours in lines two blocks long to experience the interior of the Johnson Administration Building, a strictly for-business work of architecture. Frank Lloyd Wright, waxing confident, had predicted the project would attract spectacular attention—and more—for his client.

Given that both projects serve private business interests, this may be more of a commentary concerning the quality and attraction of public spaces within the vicinity of both.
J. Spencer Lake
San Diego

Thanks for the memories

I'd like to compliment you on the October issue—it is probably the best edition I have ever seen in the many years I have been reading ARCHITECTURAL RECORD. The issue truly expresses the design of the international architects you have honored.

Additionally, in reading the obituaries [Record News, page 31], I find it difficult to contain my admiration for some of the great architects who helped develop our industry over the past 50 years. Max Abramovitz has never gotten his due. Certainly, Ed Barnes has left his mark on American architecture, and Irwin Miller of Cummins Engine Company in Indiana was one of the first individuals who appreciated the quality of good design.
Marvin A. Mass
Consentini Associates
New York City

Corrections

A November News item about a new building for New York's Cooper Union [page 30] failed to name the project's associate architect, Gruzen Samton.

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Record News

Highlights SOM sued over Freedom Tower p. 26
Photographer Ezra Stoller dies p. 31
Piano unveils Whitney model p. 32
Architecture programs growing in China p. 40

New law gives significant tax cuts to architects

On October 22, President Bush signed the new JOBS tax bill into law, representing $137 billion in corporate tax cuts. As part of the law, architecture and engineering firms will receive a $358 million tax break.

For the 2005 and 2006 tax years, firms—including sole proprietors, partnerships, LLCs, subchapter S corporations, and C corporations—will be allowed to deduct 3 percent of their net revenues from projects undertaken in the U.S. That percentage increases to 6 percent in 2007, 2008, and 2009. After 2009, it becomes 9 percent.

"This is a great victory for us," says AIA C.E.O. Norman L. Koonce, FAIA, whose organization lobbied hard for the legislation. "Our members will receive a tangible benefit for years to come."

Responding to fiscal doubts, Ron Facheaux, vice president of governmental advocacy for the AIA, makes it clear that the benefit for architects "has nothing to do with increasing the deficit." He notes, "If architects and engineers didn't get the money, it would have been used for other corporate tax benefits." Because of the way the bill was structured, he adds, every new tax cut had to be paid for by a revenue offset, including repealing the $50 billion export tax break and eliminating $60 billion in tax shelters and tax avoidance practices.

Many architects relished the law's benefits to their companies. But others, like Ron Viergutz, an architect at Jones Studio in Phoenix, have concerns about who will not benefit: "While I'm all for saving money, I'm not willing to sacrifice money in the system that could be spent for education, social security, environmental protection, health care, troops' body armor, or homeland security," he says. *Sam Lubell*

Praise and questions for Ground Zero cultural center choices

While significant praise has been given for both the choice of cultural institutions at Ground Zero and the selection of Frank Gehry, FAIA, and Snøhetta as project architects, some community members and architects have voiced concerns.

One of the biggest sources of anxiety is whether the chosen architects—particularly Gehry, who is designing the theater complex—will connect their designs with the accumulating architectural pastiche that is the new Ground Zero. Gehry, critics point out, is well known for his sculptural prowess, formal originality, and powerful statements. He is not, however, known for his ability to fit seamlessly into a larger urban framework, particularly one that must address mourning. Beverly Willis, director of Remake Downtown Our Town (RDOT), a Lower Manhattan neighborhood group, is happy about the wide variety of architecture developing in her area. But she wonders if any of the buildings, designed by very distinctive architects like Gehry and Santiago Calatrava, will be developed into a unified plan.



Some wonder if Gehry's boisterous designs, like "Ginger and Fred" in Prague (left) and the Disney Concert Hall in Los Angeles (right), will add to architectural cacophony at Ground Zero.

"Without an overall vision, without some similarity in terms of color or materials, there's not going to be anything there to identify the buildings that are being designed as part of a larger place," she notes, echoing sentiments from a few local architects, who rumble that the site may become an "architectural World's Fair" instead of a World Trade Center. Design guidelines for the site, not officially released, are not clear or forceful enough to maintain such unity, adds Petra Todorovich, associate planner at the Regional Plan Association.

Gehry could not be reached for comment, but Linda Shelton, executive director of the Joyce Theater, who along with the Signature Theater hired Gehry, wonders if meshing their building with the others is the point. "These arts institutions have been brought in as a catalyst for redefining this neighborhood. If you put in a square cement box, will people rush down to see that? We are, after all, in the business of generating audiences." Still, she adds, "we are right across the street from the memorial, and we have to be sensitive to that." Meanwhile, the directors of the Drawing Center and the Freedom Center say the exterior of their building, designed by Snøhetta, will almost certainly be Minimalist, considering its close proximity to the memorial.

Others, including Calatrava himself, question the location of the museum complex. At a recent book event in New York, he claimed the building's location just in front of his Transit Hub would block light from entering the structure, and he suggested that the museum be moved elsewhere. Master planner Daniel Libeskind, AIA, quickly rejected this idea in an interview with *The New York Times*, stating that the move would isolate the museum center and hurt the tone of the area. Lastly, questions have arisen over whether the small-scale arts groups moving downtown could present a substantial draw to bolster the neighborhood at all times. Groups say they plan to host events day and night, while Shelton adds that it would have been impossible to find an "elegant solution" to fit a huge institution like City Opera on the site. The audience for downtown institutions, she adds, will be much more "adventurous" than one coming from Lincoln Center. *S.L.*

Architect sues SOM over design of Freedom Tower



Freedom Tower (left) and Shine's project (right) twist in a similar fashion.

Brookline, Massachusetts–based architect Thomas Shine has pitted himself as an architectural David versus Goliath in a battle with David Childs, FAIA, and Skidmore, Owings & Merrill over the design of the World Trade Center Freedom Tower.

Shine claims in a lawsuit filed on November 8 in United States District Court in New York that Childs copied a project Shine had developed while he was a master's student at Yale University School of Architecture. Shine claims to have presented the project to Childs in the fall of 1999.

The project, named "Olympic Tower," is a twisting tower with a symmetrical diagonal column grid, expressed on the exterior of the building, following the twisting surface created by the floor plates' geometry. Shine copyrighted the idea last spring and is suing for copyright infringement under the United States Copyright Act.

"From the first time I saw the design of the Freedom Tower," which also features twisting surfaces, a diagonal exterior grid, and other similarities, "I was very surprised at how close it was to mine," says Shine.

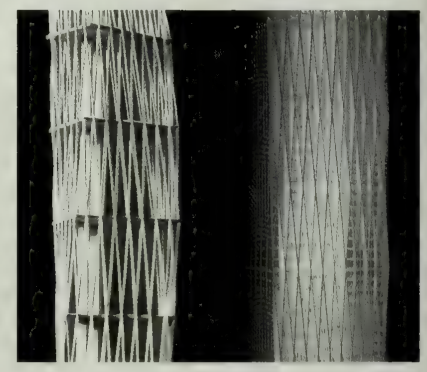
Shine, who says he has always been fascinated by the twisting forms in ceramics, says he came up with the idea while attending a 1999 Yale studio course with architect Cesar Pelli. Childs was one of the jurors who reviewed the final proposals. As part of the law suit, Shine, now a partner at his own firm, Choi + Shine, which he runs with his wife, has presented his original drawings and models next to SOM's. He admits having reservations about the suit.

"No one undertakes suing a multinational corporation lightly, and you can't help but feel vulnerable," notes Shine, who was born in England but is now a U.S. citizen. "But it's not easy for me to just walk away and let it go." He mentions that he and his lawyer, Andrew Baum of New York firm Darby & Darby, tried several times to settle the issue with SOM outside of court, but that the firm was unreceptive.

Baum stresses, "We're not trying to interfere with the construction of this building, and we're not trying to change the plans. We're looking for fair recognition of Thomas's contribution and fair compensation for his original work," he says.

SOM spokesperson Elizabeth Kubany quickly responded to the suit's filing with a lengthy statement, which stated: "The suit that Thomas Shine filed against SOM for copyright infringement is specious. While Mr. Shine's building and Freedom Tower share some common design elements, most of these elements have been industry standards for decades. The diagrid structural system combined with shaped geometry, for example, was first used by SOM in Chicago's John Hancock Center in 1970 and has been widely used since.

"This is a high-profile project and a number of people have made claims that they were the inventors of various parts of Freedom Tower's design. However, SOM and its team of engineers has combined these elements in a unique way that reflects the special nature of the building's site and its importance." *S.L.*



Shine's (left) and SOM's (right) projects both feature diagonal exterior grids.

Interim results of World Trade Center Investigation "exonerate" twin towers design

The structural steel of the World Trade Center (WTC)'s Twin Towers was stripped of its fireproofing by debris from the aircraft impact and weakened by the resulting fires, eventually causing the towers to collapse, according to interim findings released in late October by the National Institute of Standards & Technology (NIST).

The findings say the region of dislodged fireproofing was determined from the predicted path of the debris. "Had the fireproofing not been dislodged, the temperature rise of the structural components would likely have been insufficient to cause the global collapse of the towers," says NIST in the October 19 release of the interim report, part of its $16-million study of the WTC destruction on September 11, 2001. "Fireproofing dislodged by debris left the components more sensitive to heat than any areas where there was missing or thin fireproofing before the aircraft impacts," says the report.



Many experts familiar with the Twin Towers' design are not surprised by the findings. But they are worth noting, say sources, because both structural engineers and fire experts have questioned whether the design by Skilling Helle Christiansen Robertson in some way contributed to the collapse. According to S. Shyam Sunder, NIST's lead investigator for the study, an ordinary office fire would likely have resulted in burnout, not collapse. In addition, NIST has determined that the majority of the steel was stronger than minimum requirements. "The safety of the towers was most likely not affected by the small percentage of steel below the minimum," says the report. In fire tests in August (pictured, left), NIST also determined that the floor systems in the towers met the New York City building code of the time.

NIST plans to release its final draft of the Twin Towers report in December or January. A four-to-six-week public comment period will follow. The final release is expected in May. The draft report on 7 WTC is set to be released in May. The final report is expected out in July. ***Nadine M. Post***

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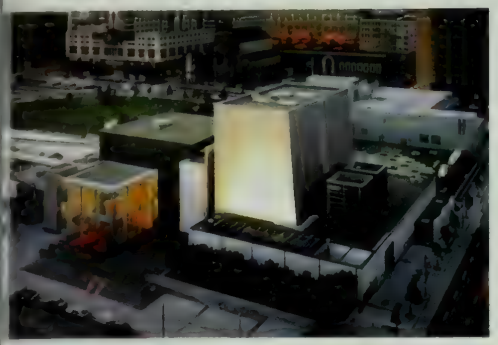


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Polshek's Center for the Arts Theater in San Francisco (left). Joy's Casa Jax project in Tucson, Arizona (below left).

Cooper-Hewitt honors Polshek Partnership and Rick Joy

Rick Joy, AIA, and Polshek Partnership were awarded the 2004 Cooper-Hewitt National Design Award for Architecture Design, marking the first time in the award program's five-year history that two winners were honored in that category.

Joy, based in Arizona, is renowned for his original, often poetic use of natural materials and for his projects' environmental awareness. Recent works include his Catalina House and Casa Jax, both in Tucson, Arizona. He is now working on a luxury resort in Utah and several residential projects in the Southwest.

New York City–based Polshek Partnership, whose William J. Clinton Presidential Library opened in November, has long been a dynamic force in educational and cultural design. Other recent projects by the firm include an expansion of the Brooklyn Museum of Art and Zankel Hall, at Carnegie Hall, in New York.

The National Design Awards were conceived in 1997 by the Smithsonian Institution's Cooper-Hewitt, National Design Museum to honor excellence, innovation, and enhancement of the quality of life. Winners in other categories included Milton Glaser for Lifetime Achievement; Yeohlee Teng for Fashion Design; Yves Béhar for Product Design; and Amanda M. Burden, chair of the New York City Planning Commission and director of the Department of City Planning, who received the Design Patron Award. *Audrey Beaton*

"Gherkin" takes Stirling Prize



London's first environmentally advanced tall building, 30 St. Mary Axe, widely known as the "Gherkin," has won this year's RIBA Stirling Prize, the U.K.'s premier architectural award. Foster and Partners designed the 40-story tapering structure for the Swiss Re insurance firm. The structure has been a popular icon in the capital since its completion earlier this year. Award judges acknowledged its success in terms of facility, ambience, and intelligent internal division of space. The relatively small footprint of the aerodynamic structure and the discretion of its siting were huge assets, they also felt. The building takes many ideas about naturally ventilated tall structures, like drawing fresh air through the light wells that spiral up the building, from Foster's Commerzbank in Frankfurt.

Although unanimous in their decision, the judges acknowledged the stiff competition presented by five other British projects: the Kunsthaus, Graz, by Peter Cook and Colin Fournier; The Spire, Dublin, by Ian Ritchie Architects; Imperial War Museum, Manchester, by Studio Daniel Libeskind; the Phoenix Initiative, Coventry, by MacCormac Jamieson Prichard; and the Business Academy Bexley, also by Foster and Partners. *Lucy Bullivant*

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Record News

7 World Trade Center tops out

On October 21, Tishman Construction topped steel for 7 World Trade Center, the last building at Ground Zero to collapse on September 11, 2001, and the first on the site to be rebuilt. The 750-foot-tall, 1.7-million-square-foot tower is designed by David Childs of Skidmore, Owings & Merrill.

The original building, designed by Emery Roth & Sons and completed in 1985, stood 641 feet tall but contained more floor space than the new building, which is narrower to accommodate a restored street. According to Ken Lewis, SOM project manager for the building, construction is about two months ahead of schedule, and 7 WTC will likely open in October 2005.



The final beam is lifted at 7 World Trade Center.

"It was pretty powerful to watch the last beam go up," says Lewis, whose office at SOM is just blocks from the Trade Center site. "Especially given the fact that so many of us watched as the [original] building came down." That collapse destroyed an electrical substation housed in the base of the building. The need to replace the station hastened construction for 7 WTC, which was not a part of the master plan competition.

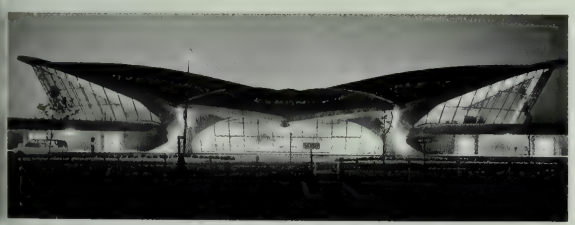
The new building will have a dense, 2-foot concrete core and a steel skeleton. The stairs, contained in the core, will be 20 percent wider than the original building's, and the staircase will be pressurized. World Trade Center developer Larry Silverstein has yet to find tenants for the new building. *Kevin Lerner*

Architectural photographer Ezra Stoller dies



Renowned architectural photographer Ezra Stoller died on October 29 at his home in Williamstown, Massachusetts, at the age of 89 from complications due to a stroke.

Attending architecture school at New York University as Modernism took hold in the 1930s, Stoller came along just at the right time to become one of the preeminent pioneers of Modernist architectural photography. By 1939, he shot the New York World's Fair, creating images that, as in many of his pictures, now commemorate the buildings and even define them in our mind's eye. During an active career that would last until the early 1980s, Stoller photographed many of the remarkable new inventions of the postwar era.



Stoller (right) shot classics like Saarinen's TWA terminal (above).

It took a Modernist eye to see Modernist buildings, and Stoller framed views that, in their limpid transparency, always clarified the structures. He did not simply document a building. According to his daughter, Erica Stoller, who runs ESTO, the architectural photo agency her father established in 1966, he said that he didn't just "take" photographs, but "made" them. Using a highly laborious process that involved a car laden with suitcases and ladders, he strategized shoots by mapping views on plans and stalking buildings for optimal sun angles and shadows.

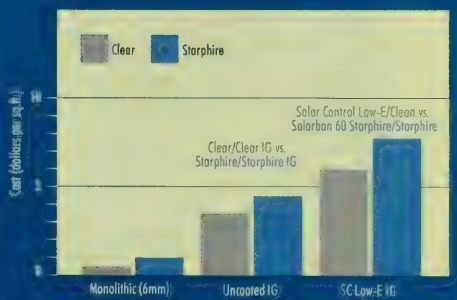
The images often provide the lasting record of a building understood in the way the architect intended, revealed in a chiaroscuro of light and shade that explained its form, spatiality, and sensibility. In a way, his aesthetic of crisp delineation, often achieved through the sculpting effects of natural light, provoked architects to design for the same effects, so that he affected the designs that he would capture. Great architects—Eero Saarinen, Paul Rudolph, Louis Kahn, Mies van der Rohe, Richard Meier—regularly sought out his services. Asked to advise how Stoller should shoot one of his buildings, Frank Lloyd Wright said not to worry, "Ezra will know." *Joseph Giovannini*

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Whitney Museum unveils model for its expansion

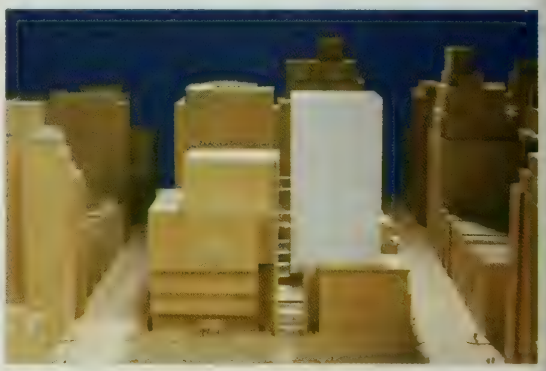
Just when all eyes were focused on the Museum of Modern Art's elegant addition, the Whitney Museum of American Art on November 9 released model images of Renzo Piano's design for an expansion and renovation of the institution's space on New York's Upper East Side. Piano was chosen for the project early this summer and has since been developing a comprehensive vision for the site.

The understated expansion plan, which the museum stresses will be "scaled to the residential buildings" in the area, will add new permanent and special exhibition galleries, education space, an auditorium, research center, a paper study room, library, and administrative space.

The new structure will sit among a group of brownstones on Madison Avenue and 74th Street, connected to the Whitney's Marcel Breuer–designed building by transparent, enclosed bridges between galleries on each floor. Piano's cubical exterior, says museum director Adam Weinberg, will likely be covered in a cast-alloy skin and rise higher than the Breuer building. It will emphasize the art inside with elegant, muted exhibition spaces.

Weinberg adds that the design will not alter the forms of Breuer's building, nor will it affect the museum's adjacent storefront buildings and nearby town-house office buildings. The design contrasts markedly with an earlier plan by Rem Koolhaas, whose flamboyant addition would have altered the building's image significantly. That plan was canceled in spring 2003.

The project will also include significant renovation of the museum's current galleries, sculpture courtyard, and facilities for art handling, while adding new retail and restaurant facilities. It comes at a crucial time, Whitney officials point out. The museum's permanent collection has grown by more than 65 percent over the past 10 years, ballooning to almost 15,000 works, but because of space constraints, the museum has been able to exhibit less than 2 percent of the collection. The design will be presented to the city in the next few months, says Weinberg, while dates for construction and completion will be announced in the near future. *S.L.*



Piano's "respectful" addition (right) will rise above the Breuer building (left) and will likely include an alloy facade.

Economic outlook for 2005 is upbeat

Economists were upbeat at McGraw-Hill Construction's Outlook 2005 Executive Conference, held on October 28 in Washington, D.C. David Wyss, Standard & Poor's chief economist, says that the nation's economic recovery is finally accelerating, with capital spending on the rise, despite excess capacity in the manufacturing sector. Robert Murray, McGraw-Hill Construction's vice president for economic affairs, noted that McGraw-Hill Construction estimates new construction starts will be up a total of 9 percent by the end of 2004. It is projected that single-family construction starts will increase 8 percent in 2004 to an all-time high of 1.53 million units. On a dollar-volume basis, income property construction will be up 11 percent.

According to Construction Outlook 2005, a report that is released at the conference annually, this favorable climate should continue into next year. The report estimates that on a dollar-volume basis, construction of institutional building will be up 7 percent, and income properties up 9 percent. Single-family residential construction starts, however, will retreat 7 percent. Murray notes that although this might appear to be a significant decline, single-family starts have grown so rapidly in recent years that even if the market decreases by 7 percent, this would still be 1.425 million units, the second-highest number in history. ***Charles Linn***



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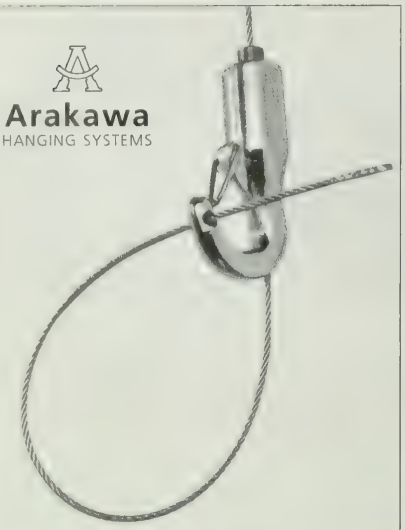
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Now opening: new projects around the world

La Scala, Milan Two years and $67 million later, Milan's La Scala, one of Europe's premier opera houses, will reopen in early December, renovated, restored, and reinvigorated. According to project architect Mario Botta, the work involved mostly stripping away detritus, linoleum floors, and bad carpeting that had obscured the 1778 original. Behind the scenes, Botta was much more forceful, clearing out rehearsal and staging areas and constructing two new buildings at the rear of the structure that, at 50 and 130 feet tall, rise above the height of the facade. After work began in 2002, local conservation groups protested the demolition, temporarily halting work with a lawsuit. But the project eventually resumed and proceeded at a brisk pace. On December 7, Riccardo Muti will inaugurate the renovated theater by directing Antonio Salieri's *Europa Riconosciuta*, which was performed at the opening of the building 230 years ago. *Paul Bennett*









La Scala reopens after renovation (top left). Cairo gets a much-needed new park (top right). Caltrans headquarters adds to L.A. dynamism (bottom left). Taipei 101 is the new height champion (bottom right).

Al-Azhar Park, Cairo Al-Azhar Park, created by the Aga Khan Trust for Culture, provides one of the world's densest cities with its largest green space to date. Its 74 acres of rolling hills, bounded to the west by Cairo's 12th-century city wall and the historic Darb al-Ahmar district beyond it, had been the city's dumping grounds for more than 600 years. The park design, by Boston's Sasaki Associates, with Sites International, a Cairo-based landscape firm, uses elements common to gardens of the Islamic world: a mix of orchards and naturalistic landscapes, and formal open spaces, including fountains and water features with a strong emphasis on symmetry and geometric design.

Park buildings—a rectilinear Lakeside Café by Serge Santelli and an arcaded Hilltop Restaurant by Rami al-Dahan and Soheir Farid—are strikingly different, reflecting the trust's concern with exploring Islamic architecture, addressing questions of tradition and modernity. *Seif El Rashidi*

Caltrans Headquarters, Los Angeles On September 27, the new Caltrans District 7 headquarters in downtown Los Angeles opened. Designed by Morphosis Architects, the 13-story, L-shaped building was completed on a fast-track schedule of just over two years. The design integrates a unique exterior skin composed of operable aluminum panels that shield the east and west facades from direct sunlight. On the south wall, a series of photovoltaic cells generate an electrical output of 92 kw, contributing to the building's overall sustainability. LEED has given it a Silver rating. Consuming an entire block in the heart of the Civic Center, the building is approximately 750,000 square feet. *Allison Milionis*

Taipei 101, Taiwan Taipei 101, now the world's tallest building, is set to open in December. The 1,667-foot-tall, 101-floor, $700 million office tower was designed by local firm C.Y. Lee & Partners. It was developed by Taiwan Financial Corporation and built by Turner Construction. The building's sloping walls are divided into eight parts, incorporating the Chinese pagoda form and the shape of growing bamboo flowers. In October, the Council on Tall Buildings and Urban Habitat officially certified the building the tallest in the world, surpassing the 1,483-foot Petronas Towers in structural height, habitable floor height, and rooftop height. Sears Tower in Chicago still holds the record for pinnacle/antenna height. *S.L.*

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Initial plan for New York East River project nears completion

While New York City's West Side waterfront has seen extensive improvements, particularly along the impressive Hudson River Park, the East Side waterfront has remained a relatively neglected eyesore, largely subjugated to the noisy tyranny of the FDR Drive.



Amenities could include pavilions under the FDR and new greenspace.

Until now. Last February, the New York City Planning Department hired local firm SHoP and London-based Richard Rogers Partnership to master plan a new East Side waterfront area. The first-stage "concept plan," a vision for uses and amenities in the area, is expected to be complete by February 2005.

The new park will stretch from Maiden Lane to Old Slip in Lower Manhattan, south of the Brooklyn Bridge. Short-term work, including pavilions—possibly made of glass—hosting public amenities under the FDR, is expected to be completed in three to five years. Long-term projects, including several acres of new park space, should be completed in five to fifteen years. The price for the development has not been released yet, says the planning department.

"Now there's a possibility of creating a stronger sense of intimacy in the city by drawing its outer edge out to the water," says SHoP partner Chris Sharples. City planning officer Michael Samuelian notes that final plans would include 5 to 10 acres of new open space built directly over the water on caissons and piles. New high-rise housing may also be built within the inner lanes of the FDR to help pay for development, he adds.

Other entities involved with the project include the New York City Economic Development Corporation, the New York State Department of Transportation, and various local community boards. The developments, explains Samuelian, couldn't come at a better time. "We expect up to 15,000 new units of housing to go up in Lower Manhattan between 2000 and 2010. At some point, they're going to demand amenities." *S.L.*

U.S. back at the World's Fair, but without government help

The Kyoto Accord is not the only major global initiative without the full-fledged support of the United States. At the 2005 World Exposition in Aichi, Japan, which opens in March, the U.S. pavilion is one of the few not receiving government financial backing. Instead, U.S. Pavilion World Expo 2005, a nonprofit group, is shouldering the task of showcasing American ingenuity. The U.S. once aggressively participated in world's fairs, but government interest has waned since the end of the cold war, and in the late 1990s, Congress prohibited the use of federal funds for the events. "The U.S. was king of the world," says Alfred Heller, author of *World's Fairs and the End of Progress*, "and Congress and the executive branch didn't feel we needed to burnish our image."



Bud Hollomon, AIA, a Jackson, Mississippi–based architect, has designed an immense wave-shaped American flag, stretched over an aluminum frame, for the pavilion's facade. Behind the flag, LED screens will display iconic images of storied American landscapes (above). Hollomon says his design takes its cue from U.S. tourist attractions. "It's show design—it's Disney World, it's Times Square, and it's trying to get people to us," he says.

When the Aichi Expo ends, the prefabricated warehouse-style pavilions for the estimated 125 participating countries will be dismantled, the building materials recycled, and the park that the fair will be held in will be restored to its original state. In keeping with the exposition's sustainable design themes, the U.S. pavilion will be partially powered by a hydrogen fuel cell. ***Alex Ulam***



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Miami Modern, or MiMo, making a big comeback

Move over, Art Deco. MiMo is making a name for itself.

Miami's South Beach brags about its signature Art Deco style, but Miami Modernism, fondly referred to as MiMo, is making a splash in the area, with its boasting boomerangs, corrugated walls, and Swiss-cheese-looking windblock. Popular in the 1950s and '60s, MiMo, the once-futuristic style, is one of Miami Beach's three predominant architectural styles, with roots in the early Bauhaus movement. Many people confuse MiMo with Art Deco. But asymmetrical designs, kidney shapes, and delta wings characterize the style, while Art Deco features symmetrical square buildings with piping and ornamental accents.



Sherry Frontenac, 1946, by Henry Hohauser, one of the first MiMo hotels.

A quiet movement to save postwar MiMo architecture got under way about six years ago. Today, that movement has escalated to a full-blown commotion. A MiMo photography exhibition has made its way to New York City and a book, *MiMo: Miami Modern Revealed*, has just been released. More shows and books are in the works. "Great cities are layers of their past," says Randall Robinson, executive director of the North Beach Community Development Corporation, who coined the term MiMo. "It only makes sense to preserve the best buildings in every era."

Unfortunately, South Florida lost some real beauties before the public-backed preservation efforts began. The Bel-Aire Hotel's facade has been destroyed, the Royal York is long gone, and the only part of the Carillon left standing is its historic tower. But those demolitions have served to spark a renewed interest in saving the region's MiMo treasures. "Along with Los Angeles, we have the most diverse collection of MiMo in the U.S. It's all over the place," says Don Worth, vice chair of the Urban Arts Committee, an organization devoted to saving the best of Miami's MiMo collection.



1957 Vagabond Motel, the first MiMo building to get historic designation.

All over the place is right. North Beach, Sunny Isles Beach, the Bay Harbor Islands, and Biscayne Boulevard all sport classic MiMo. And the preservation movement is beginning to bear fruit. The Miami Beach City Commission approved the North Beach Resort Historic District, located on Collins Avenue from 63rd to 71st Street, in the spring of 2004. The new district protects the Sherry Frontenac Hotel (above), a Casablanca-style building that greets visitors with a row of genies wearing turbans, and the Deauville Hotel, which hosted the Beatles for their 1964 performance on The Ed Sullivan Show.

The MiMo movement has sparked what Worth calls a "real estate boom" in North Beach. Canyon Ranch, a luxury spa group, is renovating what's left of the Carillon Hotel. And André Balazs recently opened a new Standard Hotel in the Lido spa, a revitalized MiMo landmark. That momentum is expected to continue as North Beach completes a master-planning process that could include various historic districts to protect MiMo buildings.

While North Beach is leading the way, nearby MiMo preservation victories include the Vagabond Motel's (pictured, left) designation as historic by the City of Miami's Historic Preservation board in the spring of 2003. The Bay Harbor Islands will celebrate "MiMo Day" next year in an effort to bring awareness to its unique collection of MiMo apartment buildings. Ft. Lauderdale is now showing interest in preserving its MiMo buildings, and even South Beach is making room for MiMo with a newly refurbished 1953 DiLido Hotel that now serves as the Ritz-Carlton South Beach.

"There's a growing respect here for architecture that gives the city character," says Miami-based architect Allan Shulman, who rehabbed the DiLido. "We have to consider the urbanism of the period and focus on saving the most significant buildings." *Jennifer LeClaire*

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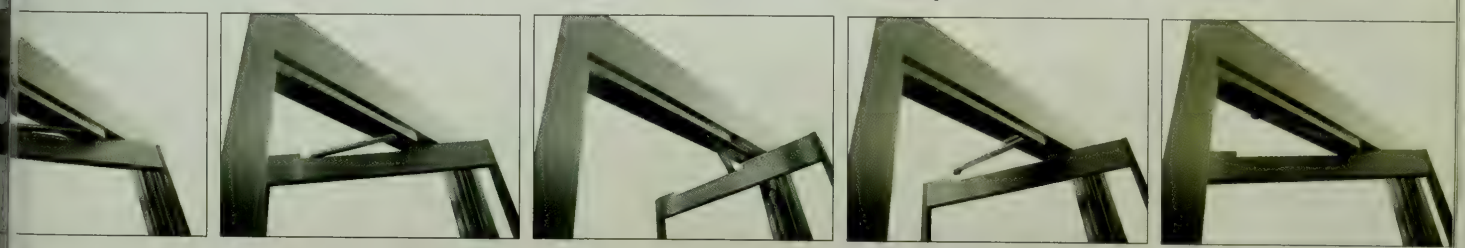
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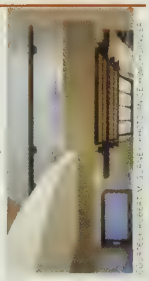
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Record News

Web site eyes Beijing's "bad" architecture





Two of the site's many featured architectural monstrosities.

Think of Beijing architecture these days, and you're likely to conjure up impressive new images like Rem Koolhaas's CCTV tower, Paul Andreu's National Theater, even the Forbidden City, now undergoing a multimillion-dollar overhaul. But beside these grand plans is a very different sort of design style, best summed up in the name of a new Web site that showcases it: badarchitecture.org.

The site, a collaboration of architecture aficionados in Beijing, skips the commentary and lets the pictures speak for themselves. These include garish office towers lining the city's main boulevard, a series of gaudy, Greek-inspired buildings from across the city, and an artist's rendering of a planned structure that looks "like a giant ball on top of a toaster oven," says Daniel Elsea, a RECORD contributor who cofounded the site with Jeremy Wingfield, Connor Wingfield, and Daniel Shupp.

The project is "not a critique, but an observational exercise" designed to highlight some of Beijing's tackiest facades, Elsea says. "China has a beautiful heritage, and wonderful buildings from over the centuries. A lot of detail, craftsmanship, and elegance went into them, but something happened to those ideas along the way."

Now the Chinese capital houses an often jarring mishmash of architectural styles. Meanwhile, many of the city's traditional courtyard homes have been demolished to make space for rows of hulking high-rises, white-tiled facades, colored-glass windows, and an abundance of neon accents.

"It seems a lot of people who create these buildings are copying an idea," Elsea adds. "They see a picture from a book or a movie, but they don't see the details." Since the site's official launch in mid-September, online traffic has risen to a steady 18,000 page views per week from fans eager to see what the next featured monstrosity will be. "We've only covered a tiny fraction of what's out there," Elsea says. "There's literally mile after mile of these buildings. And the rest of China is even worse." *Betsy Lowther*

China's art schools begin to offer architecture programs

Many a visitor to China's cities has bemoaned the lackluster high-rise buildings that have gone up in recent years (see story above) as the economy has boomed. Some suggest that a Chinese architect's education might be to blame: Traditionally trained at engineering schools, architects develop a technical aptitude for building that places little emphasis on aesthetics. But some architects believe that is set to change now since art institutes across the country, with the mission of beautifying the skylines of China's cities, have started architecture departments.

Three top art schools in the country—Central Academy of Fine Arts, the China Art Academy in Hangzhou, and the Sichuan Fine Arts Institute—have begun to offer bachelor's and master's degrees in architecture in the past two years. About a dozen other art schools in the country have expressed interest in following suit, says Lu Pingjing, dean of the architecture school at Central Academy of Fine Arts. Such programs signify a shift from a system in which "architects have only emphasized the practical side of architecture," says Wong Shu, architecture chair at the China Art Academy in Hangzhou.

A 2001 decision by China's ministry of education to give universities more autonomy allowed art schools to open architecture departments, which since the Communist takeover in 1949 had been solely the domain of engineering schools. Such programs have traditionally taught that "thinking differently is not as valuable as being efficient," says Juan Du, a visiting Fulbright scholar based at Tongji University in Shanghai. "The outcome is that architects reproduce buildings that they have seen." Art school administrators say that more attention is placed on sketching and drawing in their programs. Unlike in engineering schools, "We see architecture as an art," says Lu. ***Jen Lin Liu***



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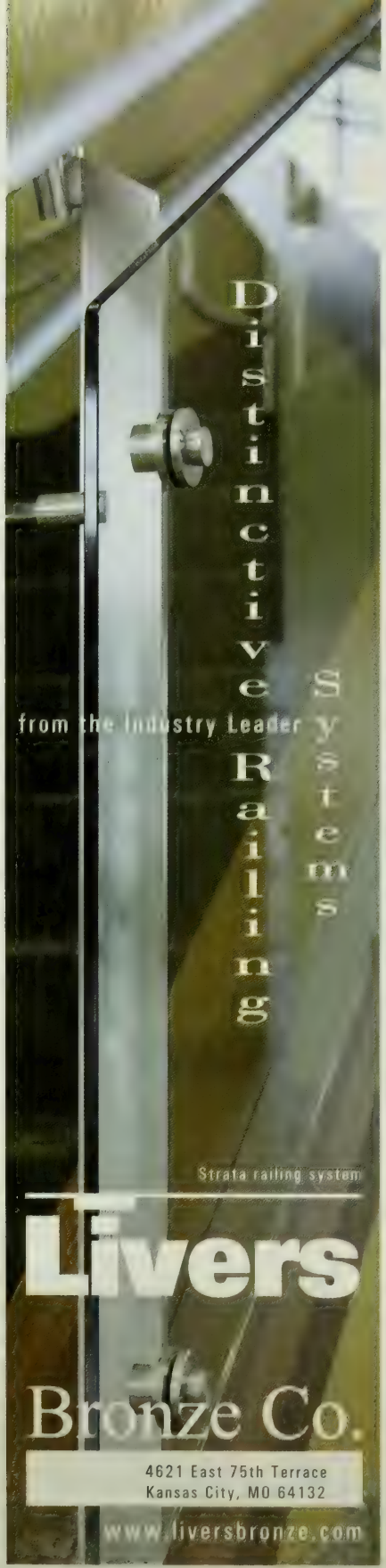
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Urban Land Institute awards superior development

The Urban Land Institute (ULI) recently named its 2004 Excellence Award winners. The competition recognizes quality land-use projects based on design, resourcefulness, and relevance, as well as community and environmental sensitivity. Winners include:

Baldwin Park, a mixed-use community in Orlando, Florida, located on a former naval base, consisting of homes, retail, office, and recreational amenities.

Fall Creek Place, a public-private urban renewal project in Indianapolis, Indiana.

First Ward Place, a run-down public-housing project in Charlotte, North Carolina, redeveloped into a market-rate residential community.

Fullerton Square, a historic civic center in Singapore, has been transformed into a world-class hotel with a commercial complex.

Playhouse Square Center in Cleveland, Ohio, underwent a 10-year effort to restore five historic theaters to their original architectural condition.

The Plaza at PPL Center in Allentown, Pennsylvania, the city's first major new downtown business development in a decade.

Technology Square at Georgia Institute of Technology was a blighted three-block area in Atlanta, remade into a vibrant urban campus.

University Park at MIT, Cambridge, Massachusetts, was a blighted 27-acre-site redeveloped into a mixed-use campus with biotechnology research facilities, as well as office, residential, retail, and hotel uses.





A Playhouse Square Center theater (right). Technology Square (above).

Walt Disney Concert Hall in Los Angeles has become a catalyst for downtown revitalization as well as a tourist destination since its 2003 opening.

WaterColor in Seagrove Beach, Florida, is a 500-acre mixed-use community dedicated to preserving the natural setting of the Gulf Coast. *Tony Illia*

New coating for Mies building ruffles feathers

When is a new finish more than a new finish? When it is used on the Cor-Ten steel facade of a little-known building by the Office of Mies van der Rohe. The building in question is the American Life Building in Louisville, Kentucky, built in 1969, just two months before Mies's death. Nana Lampton, a member of the family that commissioned the project, insists that Mies designed the building, completed after his death by Bruno Conterato.



Witness the offending brown finish.

It is the only one by Mies or his successor firm to use Cor-Ten. The material was supposed to oxidize for seven years, creating a self-sealing, rusty patina. After more than 30 years, however, the rusting had continued, and had become streaked by chemicals used to clean the windows. "We were getting a lot of complaints," says Lampton, "including from prospective tenants." Lampton consulted experts at US Steel and Turner Construction before deciding to coat it in a sealant called Shur-Cryl, leaving a flat, milk-chocolate-brown finish. "I think of it as a rust unifier," she says. "The oxidation will continue, but it will be more even and stable."

The move has caused some controversy locally and among Mies experts. Dirk Lohan, a Chicago architect and grandson of Mies, attributes the building to Conterato entirely, and disputes the need to tamper with the Cor-Ten: "The material is self-sealing, and I don't think it would be a good idea to coat it." Barry Bergdoll, an art historian at Columbia University who has worked extensively on Mies, agrees. "Surface was very important to Mies. But I suppose this is a question to be asked of the whole Cor-Ten moment in architecture."

Lampton is unfazed. "I think Mies would have approved. I love the gutsiness of the building, and I'm so proud that it's here, with its ancient proportions, that it will root Louisville here at the river for decades to come." *Alan G. Brake*

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Fountain in Marktoberdorf

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Libeskind designing first project in China



The City University of Hong Kong has awarded Studio Daniel Libeskind a $100 million commission to build a multimedia facility, the firm's first project in greater China.

The building (right) will house classrooms and laboratories for the school's media technology, computer engineering, and information technology departments. It will also include a multipurpose theater, an exhibition area, café, and restaurant.

The nine-floor, crystalline building's form reflects the ancient Chinese character for creativity, composed of the cutting tool and the plough, according to David Luther, the firm's director of public relations. The building will serve as a "lighthouse," radiating its message and intent to the campus. The interior has been "designed to encourage collaboration through the openness and connectivity" of spaces, adds Luther.

Libeskind became involved in the project because of his interest in the performing arts, having been a professor at the Center for Art and Media Technology in Karlsruhe, Germany. The firm, which has focused on projects in Europe and the United States, has recently been short-listed in a Taiwan competition to build the southern branch of the National Palace Museum. *J.L.L.*

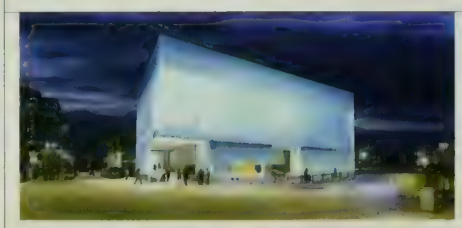
"Eye-catching" museum by Pelli under way



Cesar Pelli & Associates was recently awarded the commission for the Connecticut Center for Science & Exploration in Hartford, Connecticut.

The project is a major part of Adriaen's Landing, an initiative to reconnect downtown Hartford with the Connecticut River. The site is an existing brownfield, situated next to a major highway and railroad tracks. By placing the building as high as possible, Pelli's plan carefully negotiates these conditions, linking the facility with an existing riverwalk, and creating remarkable views. The building's forms are simple, but dynamic, with wings that extend to dominate the site. "The building will catch your eye from wherever you arrive," says Pelli. A 50-foot-by-60-foot LED screen on the western wall of the north wing projects images out toward the main street, further beckoning visitors toward the excitement within.

The glazing on the eastern wall of the south wing, overlooking the river, is slanted downward in order to protect against direct sun. The western wall of the south wing, meanwhile, slopes upward, bringing sunlight into the greenhouses inside the facility. The $150 million project is expected to open in late 2007. *Audrey Beaton*



Adjaye's plans for Denver unveiled

The Museum of Contemporary Art/Denver (MCA) recently unveiled designs for its new permanent facility in Denver's Central Platte Valley. Designed by London architect David Adjaye, the 25,000-square-foot MCA will be a space where architecture supports, rather than defines, the display of art. Located in the historic LoDo lofts district, the MCA will house five galleries, educational and children's areas, and an outdoor garden and sculpture/event space.

Design of the $5 million project calls for a glass-and-polypropylene curtain-wall system that encloses simple, discrete gallery spaces. Adjaye, who admits that he "likes to break the rules whenever possible," says the design of the museum's skin will underscore his interest in using light in surprising and unconventional ways.

The project will be the first in the U.S. for Adjaye, who was selected in April 2004 after a seven-month process. Construction is expected to begin mid-2005, with a projected opening in late 2006. *Mark Shaw*



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News Briefs

Boston ICA breaks ground The Institute of Contemporary Art (ICA) in Boston recently broke ground on its new home, a 65,000-square-foot waterfront building designed by Diller Scofidio + Renfro. [Record News, October 2002, page 31]. Slated to open in 2006, the



Rendering of the Boston ICA.

museum will incorporate gallery space, a 325-seat performance hall, an education center, and digital media facilities.

The firm's first freestanding building project in the U.S., the glass, metal, and concrete structure features natural lighting and extensive water views. Its upper levels will project over and merge with the Boston Harbor walkway. The cantilever allowed the designers to fit the museum's gallery space on a single floor, explained principal Charles Renfro. "The form isn't gratuitous. It's a response to the demands of the program and opportunities of the site." *Ted Bowen*

Miami architect sues Trump Paul Oravec says he was "shocked and dismayed" to see design photos of the Trump Grande Ocean Resort and Residences in newspapers. That's because the Miami architect claims Trump turned down similar concave-convex concepts he created in 1996. So dismayed is Oravec that he filed a copyright violation suit against the billionaire hotel developer asking a judge to halt construction and order the destruction of the two Trump-branded condo towers. Oravec is also seeking unspecified damages.

Intellectual property attorney David Tener, a partner with Caesar, Rivise, Benstein, Coehn & Pokotilow in Philadelphia, says that, while architects cannot completely avoid such disputes, they can take steps to discourage design theft. Trump legal counsel wasn't immediately available for comment. *Jennifer LeClaire*

Phifer wins streetlight competition New, modern streetlights designed by New York's Thomas Phifer and Partners, the winner of an international design competition, may soon grace New York City streets. The City Lights competition, sponsored by the city's Department of Design and Construction and the Department of Transportation, sought innovative designs that incorporate the latest technology to replace the circa 1963 "cobra head" lights.

The firm was named the winner in October for its sleek design that integrates light-emitting diodes (LED) and photovoltaics in a slender lamp's arm. The arm is connected to an aluminum base pole by two, thin stainless-steel rods. T-shaped slots in the post's fluted base will allow signage and other elements, such as street and traffic signals, additional lighting, traffic control boxes, and pedestrian push buttons, to be integrated in the design.



Phifer's lights integrate LED and photovoltaics.

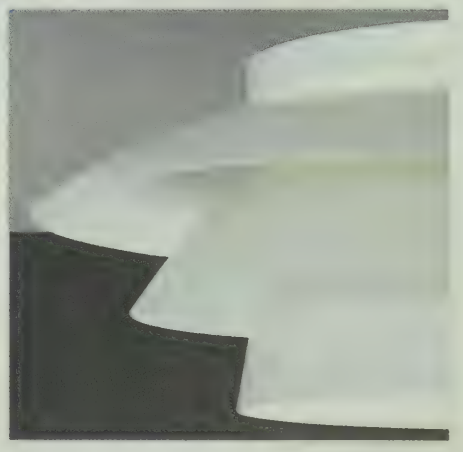
The pole's geometry, and a nonstick Teflon paint, will make it difficult for stickers and tape to be permanently affixed to the pole. New York City will add the Phifer design to its street-lighting catalog, which includes about 15 lamps from which Business Improvement Districts can choose. *John E. Czarnecki, Assoc. AIA*











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News Briefs

A look at Wright's skyscraper ideas *Frank Lloyd Wright: The Vertical Dimension*, at the Skyscraper Museum in New York City, through January 9, examines how the architect took his vision of organic architecture into the design of tall buildings, a subject that captivated him throughout his career. Curated by architectural historian Hilary Ballon, the show includes drawings of projects like the ambitious Mile-High Project of 1956 and the intricately drawn St. Mark's Towers in New York City (above). While Wright designed dozens of skyscrapers, only two—the Johnson Research Tower in Racine, Wisconsin (1944), and the Price Tower in Bartlesville, Oklahoma (1956)—were ever built, making the show a rare look at how Wright's designs parted significantly from the prevailing current. *S.L.*



Wright's sketch for "St. Mark's Towers" in New York City.

Initiative supports green affordable housing The announcement in September of the Green Communities Initiative, a $500 million effort to provide environmentally and economically beneficial houses for low-income families, will likely have a far-reaching effect on the future of home building and development in the U.S. The effort will provide 8,500 green houses to poorer families across the country by offering financial incentives as well as training and technical assistance to developers who focus on social and environmental issues. Green Communities will also rely on community-based building groups, which build the majority of the country's low-income housing, to help build the houses. The five-year initiative is a commitment of the Enterprise Foundation/Enterprise Social Investment Corporation, the Natural Resources Defense Council, the AIA, the American Planning Association, and several corporate and philanthropic organizations. *Allison Milionis*

RIBA and V&A open new architecture gallery Two of the U.K.'s most illustrious cultural institutions, the Victoria & Albert Museum and the Royal Institute of British Architects, in November marked the launch of a new partnership uniting their collections by opening a new architecture gallery, the first of its kind in the U.K., at the V&A.

The space, located near the main entrance to the V&A, and designed by Gareth Hoskins Architects, features drawings, models, photographs, and fragments from both institutions' archives, as well as a number of important loans, such as a model of the Lloyds Building by Richard Rogers. The space offers over 180 exhibits featuring some of the world's famous architects and buildings. Thematic displays introduce architecture styles, function of buildings, and the design process. A new archive and study room in the V&A's Henry Cole Wing, designed by Wright & Wright Architects, includes over one million drawings and manuscripts from RIBA's and V&A's archives, at a total cost of $18.5 million. The new facility will form the world's most comprehensive architectural resource, representing every major British architect from the 16th century to the present, and it will contain the national collection on British architecture. *Lucy Bullivant*



The RIBA V&A Architecture Gallery.

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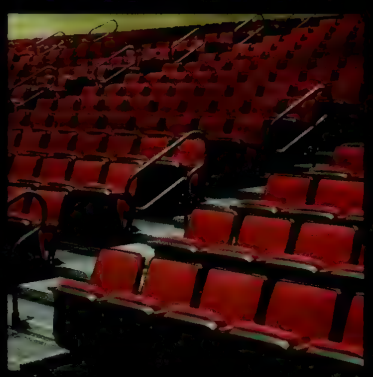
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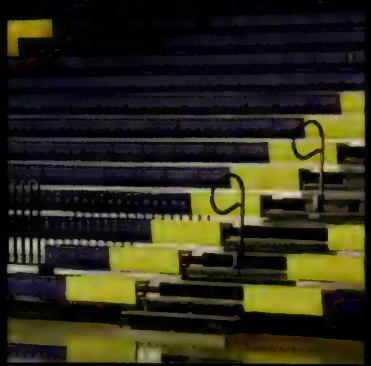
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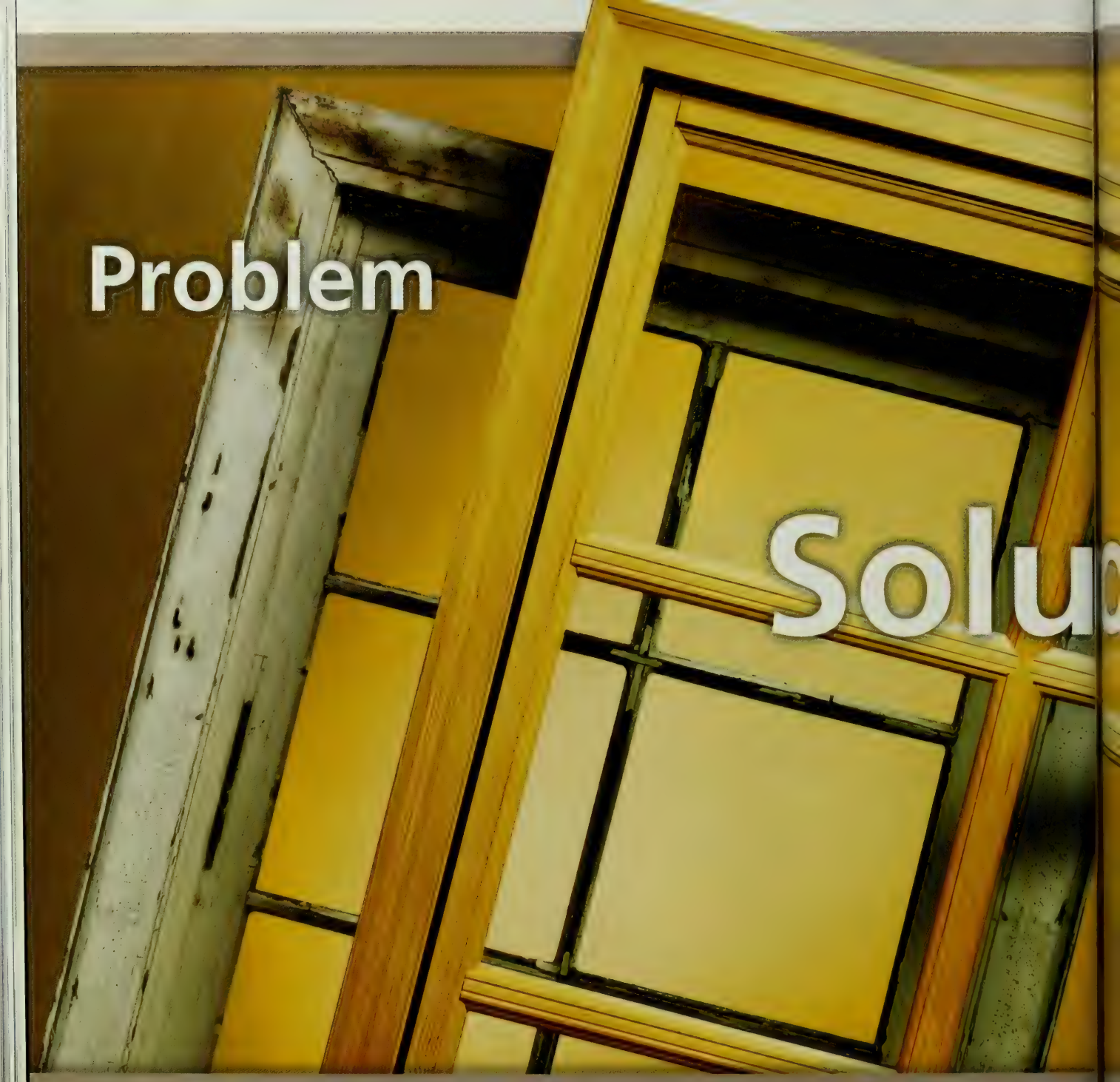


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Dates & Events

New & Upcoming Exhibitions

The Pei Architectural Legacy
Sarasota, Fla.
December 15, 2004–February 25, 2005
An exhibition of renderings, photographs, and working drawings of the designs created by Pei Partnership Architects (PPA). The event will pay tribute to renowned architect Chien Chung Pei, who founded PPA in 1992 along with his brother Li Chung. Among Pei's achievements as designer in charge and project architect are the Grand Louvre in Paris, with its emblematic 70-foot tall glass pyramid, and the West Wing extension of Boston's Museum of Fine Arts. At the Museum of Asian Art. Call 941/954-7117 or visit www.museumasianart.com.

The Furniture of Poul Kjaerholm and Selected Art Work
New York City
December 10, 2004–January 22, 2005
The first major American survey of the important Danish designer. The exhibition will combine Kjaerholm's spare, elegant furniture with selected contemporary works of art in an exploration of the vibrant dialogue that has existed between contemporary art and Modernist furniture collectors throughout the 20th century. At Sean Kelly and R 20th Century. Visit www.skny.com or www.r20thcentury.com.

Brininstool + Lynch: Process Chicago
December 10, 2004–January 29, 2005
This exhibition on the work of the Chicago architecture firm includes drawings, models, photographs, and installations of building details, portraying projects that are in progress, as well as those that have recently been completed. At I Space. Call 312/587-9976 or visit www.ispace.uiuc.edu.

ARCHLAB: New Experiments in Architecture, Art and The City
Tokyo
December 21, 2004–March 13, 2005
The exhibition explores revolutionary designs by international architects from the 1950s to the present, uncovering the origins of radical and visionary approaches to building design and urban planning that have changed the way we look at the city. At the Mori Art Museum. Call 813/5777-8600 or visit www.mori.art.museum.

Experiments with Truth
Philadelphia
December 4, 2004–March 12, 2005
An international survey of contemporary filmmaking intended to reassess the influence of cinema and the use of documentary within contemporary visual art practices. Architects Elizabeth Diller and Ricardo Scofidio, as well as Paul Kuranko, media arts specialist at the Guggenheim Museum, will assist in designing experimental spaces between gallery and theater that balance the conceptual and practical demands of each artist's installation. At the Fabric Workshop and Museum. Call 215/568-1111 or visit www.fabricworkshopandmuseum.org.

Ongoing Exhibitions

Arti & Architettura, 1900/2000
Genoa, Italy
Through February 13, 2005
This exhibition documents forays into the field of architecture made by artists as well as architects who have trespassed into pictorial exploration during the 20th century. The protagonists, artists, and architects ranging from Kazimir Malevich to Vladimir Tatlin, Antonio Sant'Elia to Giuseppe Terragni, Ludwig Mies van der Rohe to Piet Mondrian, Le Corbusier to Frederick Kiesler, Frank Gehry to Claes Oldenburg, have designed ideal spaces, volumes, and pathways based on forms and colors, born of pure creativity. At the Palazzo Ducale. Call 010/557-4004 or visit www.palazzoducale.genova.it.

Precarious Idyll: The Hinzert Document Center by Wandel Hoefer Lorch + Hirsch
Ljubljana, Slovenia
Through December 19, 2004
Coming a year before the completion of the prize-winning project by Wandel Hoefer Lorch + Hirsch, this exhibition highlights the tension between architecture and landscape. The Hinzert Document Center, which will include archives, a research library, and seminar and exhibition spaces, is intended to question the political and territorial deformations of the landscape. At Dessa Architectural Gallery. For information, call 386-1/421-7970.

34 Los Angeles Architects
Los Angeles
Through February 22, 2005
An exhibition illustrating the spirit and enterprise of a group of 34 Los Angeles architects and the issues that they feel are important in their current work. At the Architecture + Design Museum. Call 310/659-2445 or visit www.AplusD.org.

SocioPolis: Project for a City of the Future
Vienna
Through January 31, 2005
A new and unique city is rising on the periphery of Valencia, Spain. Fulfilling the three prerequisites of enabling social interaction, the linking of architecture with nature, and the integration of new information technology in the living space, 12 internationally active teams of architects have—based on Vicente Guallart's master plan—formulated responses to the most pressing topics for current and future urban planning. The exhibition provides an overview of the planning zone and an introduction to the architects' designs. At Architekturzentrum Wien. Call 431/522-3115 or visit www.azw.at.

A Highlight of Vienna's Ringstrasse: James Turrell and Targetti Light Art Collection
Vienna
Through January 16, 2005
MAKlite, a unique permanent light installation by American artist James Turrell, provides the MAK building with a new dimension of visibility, accentuating the overall architectural impression. The technology for the project was developed by the Florence, Italy–based architectural lighting specialist Targetti, whose Targetti Light Art Collection, Mehr Licht, will be on exhibit in the MAK Upper Floor Exhibition Hall. Visit www.MAK.at for further information.

Ezra Stoller Architectural Photography
Williamstown, Mass.
Through December 19, 2004
Ezra Stroller was an architect before he was a photographer, and with his stunning black-and-white photographs helped create a public for Modern architecture, making it seem heroic. The exhibition consists of approximately 50 photographs representing six icons of Modern architecture: Rudolph's Yale School of Art and architecture; Kahn's Salk

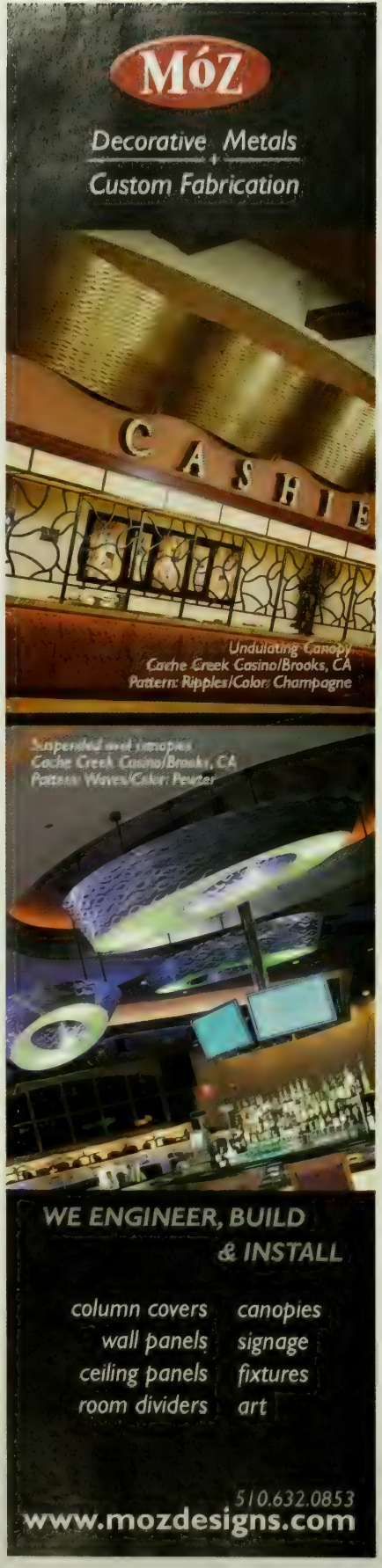


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Dates & Events

Institute; Wright's Fallingwater and Guggenheim Museum; Saarinen's TWA Terminal; Mies's Seagram Building. At Williams College Museum of Art. Call 413/597-3178 or visit www.williams.edu.

Michael Wesely: Open Shutter at the Museum of Modern Art
New York City
Through January 2005
This exhibition presents a unique photographic project inspired by the construction of the new Museum of Modern Art. At the Museum of Modern Art. Call 212/708-9400 or visit www.moma.org.

Glamour: Fashion, Industrial Design, Architecture
San Francisco
Through January 17, 2005
The concept of glamour is based on a notion of excess and has been glorified in the discipline of fashion. Conversely, glamour has been marginalized in industrial design and even reviled in architecture, where the pared-down aesthetics of Modernism and Minimalism have prevailed since the middle of the 20th century. On view are haute couture by Dior and Versace, automobiles from Jaguar and Bentley, architectural works by Philip Johnson and Herzog and de Meuron. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.

Paul Rudolph: The Florida Houses & The Cannon Chapel
Atlanta
Through December 31, 2004
Paul Rudolph, a pioneer of 20th-century architecture, began his career designing intimate beach houses on the west coast of Florida. This exhibition celebrates the innovation and drive that propelled him to international renown in the 1960s. At the Museum of Design Atlanta. Call 404/688-2467 or visit www.museumofdesign.org.

Lebbeus Woods: Experimental Architecture
Pittsburgh
Through January 16, 2005
One of the most innovative experimental architects working today, Lebbeus Woods combines an extraordinary mastery of drawing with a penetrating analysis of architectural and urban form, and social and political conditions, that is nourished by his wide knowledge of fields ranging from philosophy to cybernetics. At the Heinz Architectural Center. Call 412/622-3131 or visit www.cmoa.org.

Lectures, Conferences, & Symposia

31st Annual New York Housing Conference and National Housing Conference Awards Luncheon
New York City
December 7, 2004
John Zuccotti, the chairman of both Brookfield Properties and the Real Estate Board of New York, will receive the Lifetime Achievement Award at this annual luncheon. The event, the largest annual gathering of the affordable-housing community in the country, will be held at the Sheraton New York Hotel and Towers. For further information visit www.nhc.org.

Protecting Water Resources: Smart Growth and Low Impact Development
Washington, D.C.
December 15, 2004
John Tippett, executive director of Friends of the Rappahannock, will present current practices in the integration of low-impact development design techniques with smart projects. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

The U.S. Capitol: Its Lessons for Today
Washington, D.C.
December 15, 2004
Henry Hope Reed will discuss the design history of the U.S. Capitol, often regarded as an example of American Neoclassical architecture. At the National Building Museum in collaboration with the Institute of Classical Architecture. Call 202/272-2448 or visit www.nbm.org.

The Architectural League of New York Lecture Series
New York City
December 2, 9, and 16, 2004
Collaborations between designers, scientists, and artists, and consensual design approaches are blurring professional boundaries and creating new fields of overlap and design exploration. This series presents architects, landscape architects, artists, and engineers in lectures, dialogues, and panel discussions, to probe how these ideas are being developed in contemporary practice. At the Great Hall, Cooper

Dates & Events

Union. For more information, call 212/753-1722 or visit www.archleague.org.

The Harvard Design School Lecture Series
Cambridge, Mass.
December 1, 7, and 14, 2004
Lectures by Alan Berger, associate professor in the department of landscape architecture, Jeanne Gang, who leads Studio Gang Architects located in Chicago, and Brian Healy of Brian Healy Architect, Boston are scheduled in the Piper Auditorium. Call 617/495-5453 or visit www.gsd.harvard.edu/events.

Architecture and Identity
Berlin
December 6–8, 2004
The conference will bring together an international group of academics and practitioners of architecture and the social sciences to explore the "own" in a context of globalization vs. regionalization, as well as the "foreign" in the construction identity in architecture. At the Technische Universitat Berlin. Visit www.architecture-identity.de for further information.

NFBA Frame Building Expo
Louisville
February 25–27, 2005
The National Frame Builders Association's (NFBA) event brings post-frame industry professionals from across the nation together to share ideas, as well as architects, builders, building material dealers, building component manufacturers, and engineers. At the Kentucky Convention Center. For more information, call 800/557-6957 or visit www.nfba.org.

Competitions

National Aids Memorial Design Competition
San Francisco
Registration Deadline: December 24, 2004
Entry Deadline: January 7, 2005
The National AIDS Memorial Grove is sponsoring an international design competition to identify an outstanding artistic feature that will memorialize all those who have died of AIDS and honor those who continue to fight the pandemic. The competition is open to students and professionals in the disciplines of art, architecture, and landscape architecture. Visit www.aidsmemorial.org.

Buzzards Bay Design Competition
Bourne, Mass.
Deadline: April 19, 2005
A single-phase, open International Design Competition seeking proposals for a 17-acre park with extensive frontage on both the Cape Cod Canal and Main Street, Buzzards Bay. The main objective is to create an intergenerational recreation area and cultural amenity for the use of local residents, while encouraging downtown economic redevelopment. Visit www.buzzardsbayvillageassociation.org.

The 2005 Latrobe Fellowship
Deadline: February 4, 2005
The purpose of the fellowship is to support research that will increase the knowledge base of the architecture profession. Sponsored by the AIA College of Fellows. Visit www.aiai.org/fellows_latrobe_2005 for detailed information.

Flight 93 National Memorial Design Competition
Deadline: January 2005
The response to the violent acts in the skies over Southwestern Pennsylvania on September 11, 2001, will be a national memorial to the people who died in what has become known as the first civilian act of defense in the war on terrorism. The design competition welcomes all submissions of ideas that will commemorate the 40 heroes of Flight 93. For additional information, visit www.flight93memorialproject.org.

Ceramic Tiles of Italy Design Competition
Deadline: January 30, 2005
North American architects and interior designers are invited to submit residential, commercial, or institutional projects featuring Italian ceramic tile completed between January 2000 and January 2005. To learn more about the competition, visit www.italiatiles.com or www.italytile.com.

E-mail event and competition information two months ahead of event or submission deadline to elisabeth_broome@mcgraw-hill.com



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For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

This month, archrecord2 invites you to review this year's Design Vanguard Architects (some of whom have formerly appeared in archrecord2) to discover the newest in architectural talent that spans the globe; coverage begins on page 111. In Work, learn more about an in-house competition held by RTKL, where young talent designs for other young talent. Also this month, we feature a listing of upcoming student and open competitions.

WORK

Designing space for designers

An old alliance between the architectural firm RTKL and the Maryland Institute College of Art (MICA) recently impacted the young designers of the multinational firm. In the early 1990s, RTKL designed a visiting artist's sculpting studio on MICA's campus—so when the board of MICA decided a new dormitory was necessary, they approached the firm that had assisted them years ago. RTKL chairman Paul Jacob, AIA, describes the timing of MICA's request as serendipitous. "Every year we hold a companywide design conference for selected young employees to foster a culture of collaboration while creating a dialogue on design," he explains. "For the conference in October, we used the competition's process as this year's topic."

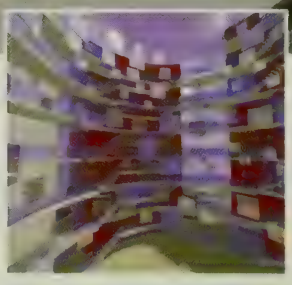
Seven of RTKL's offices chose the young designers who would work on the creation of the new dormitory, whose program would also include a black-box performance space, a campus café, meeting facilities, and a career development center. While young designers spearheaded and ultimately presented the projects, entire offices would collaborate on the "after work hours" project.

After the allotted two months, the designers presented their schemes to a panel of jurors at MICA's Brown Center. Jacob says, "We were absolutely blown away by the results." However, it was the London-office entry, led by Grant Armstrong and Christy Wright, that was overwhelmingly chosen as the winning proposal. "There is a certain playfulness to the design that successfully resolves a lot of problems in a tight site," comments Jacob. The circular design comprises three residential "pods" that are anchored by a vertical spine of studio spaces. The scheme, including the ground-level glass-walled public spaces, breaks up the scale of the building and also acts as a gateway to the campus.

The members of the jury were not the only group enthusiastic about the work of the London team: MICA's board of trustees and members of the local community approved of the complex design. Currently, Armstrong, Wright, and the Baltimore-based office of RTKL are finalizing the design and setting up time lines that will have this project completed in the fall of 2007. *Randi Greenberg*

To see the other entries from the RTKL design competition, go to archrecord.construction.com/archrecord2/





While the London office's entry, consisting of a circular structure with an enclosed courtyard (top and right), was the unanimous winner, the jury agreed that every entry, like those from Madrid (below) and Baltimore (bottom right), had innovative elements.





COMPETITIONS

A subject frequently explored in the pages of archrecord2, competitions are often a good opportunity to sharpen one's craft, create collaborations, and attract attention to a burgeoning career. We've done a little digging to bring several competition listings to your attention. For easy access to more information on the competitions listed below, visit *archrecord.construction.com/archrecord2*, where we've linked to the sponsor's page. Good luck!

Student Competitions

2005 Berkeley Prize Essay Competition Awarding excellence in architectural writing and thought among undergraduate architecture students in accredited schools worldwide. Finalists will be awarded a cash prize and be eligible to compete for the Berkeley Prize Travel Fellowship. For more information, including the competition question, go to www.berkeleyprize.org. *Submission Deadline: December 10, 2004.*

Extreme: Creating Space in Extreme and Extraordinary Conditions UIA 2005 Istanbul Congress offers an opportunity for future architects to design spaces for extreme conditions. One grand prize winner receives $7,000. For more information, visit www.uia2005istanbul.org. *Registration Deadline: January 27, 2005. Submission Deadline: June 13, 2005.*

Student Union Building This ACSA/AISC Student Design competition challenges students to design a student union building for their campus or a campus of their choice. Visit www.acsa-arch.org. *Registration Deadline: February 8, 2005. Submission Deadline: May 3, 2005.*

Textile Structures for New Building The Working Group for Textile Architecture and Techtextil, the International Trade Fair for Technical Textiles and Nonwovens, are holding their 8th annual competition to promote innovative ideas and solutions to building with textiles or reinforced materials. Young professionals who graduated after January 1, 2004, are also invited to compete. More information is available at www.textile-architecture.com. *Submission Deadline: February 28, 2005.*

Enlightening Learning Environments The International Association for Humane Habitats' third annual design competition call for entries to create a program for facilities of learning. More details are available at www.humanehabitat.org. *Submission Deadline: January 27, 2005.*

Student Suburban Design Competition Kennesaw State University is sponsoring a competition on suburban design and looking for innovative ideas on how suburbs can be organized and constructed. Students are invited to submit plans for new forms of housing, transportation, commerce, amenities, and/or recreation. For more information, contact Dr. Fein at mfein@kennesaw.edu. *Submission Deadline: January 14, 2005.*

Open Competitions

2004–2005 Young Architects Forum The Architectural League of New York's call for entries to architects and designers 10 years or less out of undergraduate or graduate school. Winners of the competition receive a cash prize, exhibit their work, and present lectures at the League in New York City. For more information, call 212/753-1722 or visit www.archleague.org. *Submission Deadline: February 4, 2005.*

The Parachute Pavilion: an Open Design Competition for Coney Island The Van Alen Institute and the Coney Island Development Corporation announce their competition for designers to create a project in Coney Island. The inaugural New York Prize of $20,000 will be awarded to the first-place winner. More information on the competition can be found at www.vanalen.org. *Registration Deadline: February 25, 2005. Submission Deadline: April 18, 2005.*

A Door to Paradise designboom and COCIF have announced an open competition to design an interior residential door. The design must take into account technological innovation, ease of use and manufacturing, and may include a variety of materials. Cash prizes go to five winning entries and four honorable mentions. More information can be found at www.designboom.com. *Submission Deadline: January 25, 2005.*

Places of Work In their sixth annual architectural photography competition, architekturbild is seeking a series of four photographs on the topic of the workplace. Cash prizes will be awarded. For more information, go to www.architekturbild-ev.de. *Submission Deadline: January 28, 2005*

Kyrl's Quay Design Ideas Cork City Council and the RIAI are seeking design ideas for a group of prominent waterfront sites that stretch from Cornmarket Street along Kyrls Quay. More details can be found at www.cork2005.ie. *Submission Deadline: April 1, 2005.*

Buzzards Bay Design Competition A competition seeking conceptual proposals for a 20-acre park adjacent to waterfront, commercial, and residential areas. For further details, go to www.buzzardsbayvillageassociation.org. *Submission Deadline: April 19, 2005.*



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Without government support, trying to save Moscow's architectural heritage is a difficult task

Correspondent's File

By Paul Abelsky

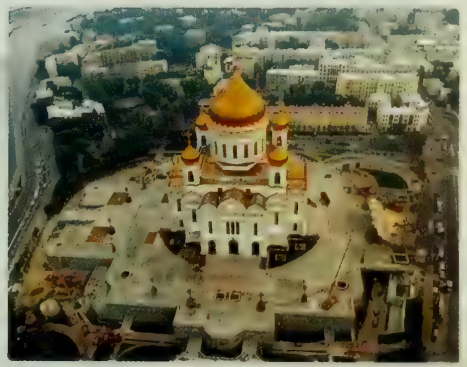
n May of this year, at Arch-Moscow, Russia's most prominent architectural exposition, one of the central pieces on display was an eloquent tribute to several torn-down historic buildings. Three stylized gravestones, accompanied by photographs and epitaphs, acknowledged the loss of the Manezh Square gates, the Voentorg (a famous Soviet-era department store), and the famous Hotel Moskva, which embodied a spectrum of more than a hundred years of architectural history. These edifices represent the microcosm of the preservation crisis unfolding in Moscow amid one of the largest construction booms in city's history.

The transformation of Moscow from a socialist city into a faux-capitalist metropolis experiencing extraordinary growth has severely endangered Moscow's architectural heritage, which had already suffered grave damage during the Soviet period. The administration of Mayor Yuri Luzhkov has been quite complicit. On the one hand, the mayor has shown some historicist tendencies by approving wholesale reconstruction of select monuments demolished by the Bolsheviks. Indeed, as the often-used term "the Luzhkov style" reveals, the mayor is the first Russian or Soviet ruler since Nikita Khrushchev to have his name firmly attached to an entire mode of architectural expression. But he is also behind an invasive urban-planning policy that has not spared major Moscow landmarks. Numerous

Paul Abelsky is a writer based in St. Petersburg, Russia. He studied European history at Yale University.







Historic areas in Moscow, such as St. Nicholas Gate Square (top, turn-of-the-20th-century photo), have been all but destroyed. Church of Christ the Savior (left, 1930s) was destroyed and recently rebuilt (above).

ties bind the city administration to developers and the real estate industry. Elena Baturina, the mayor's wife, is the co-owner of the Inteko construction firm, one of the largest in the Moscow market. The city government is closely associated with similar companies, and the business interests of government functionaries blend imperceptibly with their official duties. As if more proof were needed, this summer the mayor sued Aleksei Komech, the director of the State Institute of Art History and a member of the city's architectural council, for defaming his "business reputation."

Another way to subvert the protection of buildings has been to put pressure on preservation agencies, many of which are branches of the city administration. For years, a number of such commissions have been compiling lists that identify historically important structures. Such buildings were accorded the rank of "newly disclosed monuments" and offered temporary protection. The fragility of this status became apparent in August 2003, when the Voentorg was torn down by the city (which had recently taken over ownership), despite its position as a "newly disclosed monument."

For the first time since the years of the Perestroika, a major civic movement has emerged in defense of the city's architectural heritage. Two prominent groups have come forward. The first is an Internet project called Moscow That Is No More (www.moskva.kotoroy.net; unfortunately, the Russian characters don't translate to normal Web browsers), which attempts to make public the loss of historic buildings and compiles the documentation and images of old Moscow. Konstantin Sumarokov, the site's curator, says that his goal is "to create a virtual museum of what has been lost." Also, three foreign journal-





Sovetskaya Square (top, 1930s), built in 1792 as a parading ground for the guards in front of the General-Governor's house, has a long history of "historic reconstruction." The iconic Moskva Hotel (bottom, 1930s) was demolished in July 2003.

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he Polivanov House :op, early 1900s) was amaged in a 2001 fire and hasn't been repaired. Streets may be repaved in front of The Historical Museum and Alexander Gardens (bottom, early 1900s).

ists residing in Moscow recently launched the Moscow Architectural Preservation Society to publicize the situation and involve the international media. Indeed, the clearest example of preservationists' success is the raised public awareness of the crisis. Heritage issues are a constant subject of discussion in newspapers, on TV, and in private, and protests in front of buildings like the Polivanov House (pictured, left) have been seen on the national news.

Still, while the public often laments the loss of high-profile landmarks, lesser-known but equally significant buildings have suffered in recent years. The Einem House, built between the 17th and 19th centuries, contained halls in Naryshkin Baroque style with well-preserved interiors and a statue gallery. After the last inhabitants were evicted, the building suffered several fires and was bulldozed in November 2000. Two prerevolutionary movie theaters, the Uran and the Neoclassical Orion, both built in 1910s, were demolished between 1994 and 1997. And the Trubetzkikh House, with its 19th-century interiors, underwent reconstruction after a 2001 fire using modern techniques, effectively erasing its historic value.

The administration's compromise solution has been to demolish original structures and replace them with enlarged replicas that feature new elements like underground parking and modernized facilities. The city is thus lined with fake duplicates, deprived of old Moscow's historic fabric. An example of heritage groups' influence is the recent decision by the city government to carry out a more careful, if hurried, reconstruction of the Neoclassical Manezh gates, with their intricate wooden support structures.

Meanwhile, the imperative for preservationists, says David Sarkisyan of the Moscow Museum of Architecture, is "to resist the authorities at every step." The real aim, he adds, "is to convince the city officials that an authentic building is inherently more valuable than a replacement or a fake copy." ■

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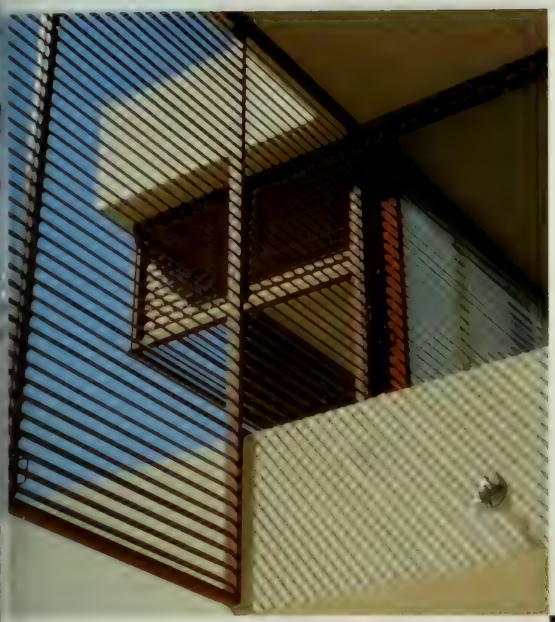
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Left: TKG Consulting, San Diego, CA
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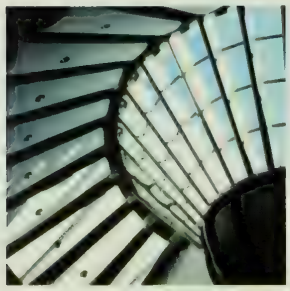
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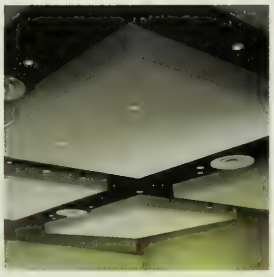
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CIRCLE 140 ON READER SERVICE CARD

Playing the name game: A short primer on what it all means

Commentary

By Aric Chen

hat the heck is an Iterae, dECOi, or ervo? SHoP, the little O notwithanding, we can understand. We so know—we think—what a Sumo . But Emergent is an adjective, not proper noun. Nevertheless, these ake up just part of a semantic hirlwind of offbeat appellations that chitects have lately been giving emselves. Whatever happened to e trusty surname?

At a time when exhibitions alled *Archilab* and *Metamorph* esent "episodes" and "interven-ons," rather than mere projects, s no surprise that emerging—or nergent—architects have taken abstract names. Many, like Ply, ot, Peel, and Manifold, allude to the lationship between process and rm. Some are unabashedly techie, e Plasma and nARCHITECTS, its st letter referring to the notation r a mathematical variable. Others nply collaboration and creative nvergence, like Mesh and Graft hough that last one can have less savory meaning as well, specially for a firm that may have deal with politicians or certain ades). More confounding, and erhaps overzealously punctuated, ave been the likes of LE.FT and -ING.PHX.LAX.

What these firms generally ave in common is a desire to place e collective idea above the individ-al. "If we work with others in the ture, they can feel part of some-thing other than ourselves," explains Eric Bunge of nARCHITECTS. "Our name allows us to change and grow."

Such dynamic, collaborative strategies go back at least to the 1960s, when experimental groups like Archigram, Archizoom, and Superstudio rebelled against the Modernist myth of the singular genius. Later, Thom Mayne's Morphosis, Rem Koolhaas's Office for Metropolitan Architecture, and others tried to keep the spirit alive, though they've since been overshadowed by their founders' names.

Who's that?

Then came the 1990s. That's when partnerships called Foreign Office Architects, fieldOFFICE, Architecture Research Office (ARO), Open Office, and Design Office began to appear. Besides occasional confusion (was that project by Foreign Office, Open Office, or Design Office?), these names imparted a seriousness of purpose and represented a reaction against, among other things, the previous decade's Postmodernist grandstanding. "The anonymity of our name comes from the idea that the built element is something on its own, beyond what the designer puts forth," says ARO's Adam Yarinsky, who cofounded that firm in 1993.

At the same time, these names were as coolly minimalist and fashionably ironic as those of the trendy eateries (for example, Cafeteria and Canteen) and hotels (The Hotel) that helped define the 90s' own self-indulgences. Design was hip, and many designers began branding themselves accordingly.

Thus, it makes perfect sense that at the height of the late-90s Internet bubble, when the most current crop of firm names began to surface, they would express an infatuation with technology. "In physics, plasma is described by a state that is wholly governed by external conditions," explains the London-based Eva Castro of Plasma Studio, which was established in 1999 and has one partner based in Italy. "We wanted to work in a model that responded to technologically induced transformations."



Keeping up with the times

Such responses can be contagious, and even some of architecture's most established players have caught the bug. In 1967, Hugh Hardy teamed up with Malcolm Holzman and Norman Pfeiffer. Their practice would become known for its iconoclasm, but it was rather reliably named Hardy Holzman Pfeiffer Associates. Last summer, when the three founding partners decided to go their separate ways after 37 years, Hardy, now 72, christened his new venture H3 Hardy Collaboration Architecture.

Too much theory perhaps

Hardy's latest moniker may be an unfortunate mouthful—"We just call ourselves H three," he offers—but such names are often penetrating, thoughtful, and even witty. They place their firms at the cutting edge, while speaking of a discipline that is probing its peripheries with brio. However, they also carry risks. "Architects are often seen as parodies, speaking in pretentious jargon that keeps others out of the conversation," says Scott Hamrah, a semiotics expert who specializes in naming products and companies. "And these names don't help." They also become dated.

"Things like slashes and parentheses are really passé"—note to Coop Himmelb(l)au—"and prove only that you've been reading old Postmodern theory," explains Hamrah. "However, I would consider hyphens sort of emergent," he concedes of the old-school mark. "Anything low-tech like that is emergent." As it happens, the New York firm LOT/EK fairly recently switched to LOT-EK. ■

Aric Chen is the gossip columnist for The Architects Newspaper *and a contributing editor for* I.D., Surface, *and* Interior Design.



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Let a thousand flowers bloom: Cuban Modernism's short moment in the revolution's sun

Critique

By Michael Sorkin

very revolution has a creative half-e. The Russian Revolution begat onstructivism before its slide into talitarianism. In France, the archi-cture of Boullée and Ledoux presented a moment of confi-ence that was too soon displaced y the Terror. In Cuba in the late 950s and early '60s, a brief hal-yon period of intense architectural nd artistic creativity soon gave ay to dreariness as the country's conomy collapsed and politics ecame increasingly repressive.

Architecture and Revolution n Cuba, a show at Storefront for Art nd Architecture in New York City, urated by Eduardo Luis Rodriguez, ocuments the efflorescence of rchitecture in Cuba following the verthrow of the Batista regime. This vas a time when Cubans embraced he optimistic promise of bread and oses, reflected both in the range of rograms encouraged by the new overnment—schools, housing, cul-ural centers, hospitals, ice-cream arlors—and in the flamboyance and reedom of their architecture.

Perhaps the best known and most magnificent of these projects s the complex of art schools—for music, drama, modern dance, ballet, and the plastic arts—begun imme-diately after the Bay of Pigs invasion n 1961 as a cultural riposte to Yankee designs on the island. Personally initiated by Fidel Castro and Che Guevara and sited on the grounds of what had been a posh country club, these buildings—designed by the Cuban Ricardo Porro and Italians Roberto Gottardi and Vittorio Garatti—embody the best of a compassionate revolution, one in which artistic expression is seen as indispensable to human development and success is marked by expressive freedom.

The buildings themselves are sinuous, complex compositions—each an urbane little village—laid out with tremendous sensitivity to the lush, undulant landscape, and built in a common materiality of brick, tile, and concrete. They share, too, a technology of hand-built Catalan vaulting—supervised by an elderly Spanish master of the art—that yielded an amazing Xanadu of domes and arches. Both individually and as ensemble they represent one of the great architectural creations of the century, rich in influences but ultimately sui generis. A piece of good news is





The National School of the Plastic Arts (above) by Ricardo Porro and the Coppelia Ice Cream Parlor (left) by Mario Girona exemplify the flowering of a humanistic spirit and sense of architectural adventure that took place in Cuba in the first years after the Communists took power.

Michael Sorkin practices architecture in New York and is the director of the graduate urban design program at City College of New York.

that portions of the complex—much of which is in a state of ruinous deterioration—are slowly being restored.

The star of the Storefront show is Ricardo Porro. He holds center stage not simply because of his leadership of the Art School project and his astonishing architectural work (continued in Europe after his exile from Cuba), but thanks to his beguiling appearance in a film of interviews produced for the exhibition. Porro (whose students and colleagues affectionately nicknamed him Porbusier and Porromini) is an enthusiastic and articulate sensualist, and his sexualized and ethnic description of his work is unabashed. In the art schools, Porro sought to express the Afro-Cuban culture he thought held the island's soul. Unfortunately, this sensibility was at the core of the project's fall from favor. As the revolution grew more Stalinist in its suppression of diversity, the schools were charged with a variety of bourgeois crimes: individualism, irrationality, idealism, and luxury.



The Center for Construction Research and Experimentation in Havana by Hugo D'Acosta, built in 1967.

But in the beginning, what a time it was! Porro describes this "utopian" period as "*mas surrealista que socialista*," and the sense of adventure throbs from accounts of a moment when all seemed possible. Utopia is the ultimate erogenous zone of architecture, and the merger of the discourses of revolution and pleasure was one of the great promises of the time—certainly part of the initial ideological armamentarium of the long-haired, cigar-chomping progenitors of the Cuban revolution, before their slide into Puritanism and homophobia. Indeed, the cover shot for the exhibition (a 1959 photo of an elegant group of architects in suits

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d ties mingling with bearded revo-
ionaries in baggy military fatigues)
ggests a conflict that was to return.

Describing the Art School
oject, Porro recalls the "victorious
d almost epic atmosphere" and
e directive from Fidel to create
ie most beautiful art school in
e world." He speaks of making a
mbol of fertility and evokes
:hun—the Afro-Cuban fertility
ddess—as the muse of the build-
g, and female sexuality in general
intrinsic to the Cuban national
aracter. "*Cuba es una mulata*," he
:clares, and the three (albeit male)
chitects of the schools deliver on
is description of the feminine in
rms that, however regressive they
ay seem to us nowadays, were
e conceptual medium for produc-
g work of curvaceous sensuality
id often frank symbolism (includ-
g Porro's famous water-squirting
apaya sculpture).

Those happy days were all too
ief, and the schools were never
lly completed and only partially
:cupied. Porro describes the dis-couraging atmosphere engendered by what was to become a permanent political and economic crisis. There is a striking moment in the film when Porro describes the arrival of Soviet panelized housing as the death knell for the creative period that produced the art schools. (In 1964, the Russians sent a gigantic factory for production of the "Gran Panel" system as a gift to the Cuban people.) As Porro speaks, the camera angle widens to reveal a terrible—and terribly out of place—panelized building for student dorms looming in the background. In its grim rectilinearity, mindless siting, and shabby detailing, the building is the antithesis of the organic, humane approach of the schools.

The art schools were not alone in representing this approach. A striking revelation of the show is the numerous examples of post-revolutionary Cuban architecture embracing progressive design practices that were international in their appeal and very much parallel to directions contemporary in the U.S. and elsewhere. Experiments in modularized housing, cement-asbestos prefab pods, standardized school construction, and integrated housing developments have a wonderful familiarity to those of us who were in U.S. schools back then.

A place without development

Although the narrative of a small island caught in the rivalry between two colossi is by now the standard issue, it was crucial in shaping Cuba's architecture. A visit to Cuba nowadays is filled with awful contrasts. There are few places where the gap between education and income is so great. Terrible scarcities of goods and services (public transit, for example, is in ruins) dominate one's impression of the island. This is an economy in tatters because of bad and authoritarian choices, sclerotic bureaucracy, misplaced alliances, and, of course, unending U.S. pressure.

Ironically, the dire situation has had some fortuitous effects. Crumbling Havana—one of the most beautiful cities on the planet, with centuries of wonderful buildings—remains relatively unscathed by development, because there isn't any. But once Fidel departs the scene, there will likely be a new set of risks. However much one wishes the Cuban people to enjoy lives of freedom and prosperity, the onslaught of U.S.-style urbanism—with its domination by the car, its fast-food effluvium, its insensitivities to history, its suburbanization—will likely put the coherence of the city and its very public atmosphere and vibrant, if stoic, solidarity at risk.

Although Porro may be the star of the film, the best line comes from Mario Girona, architect of the fabulous Coppelia Ice Cream Parlor. Girona recalls that in designing the project—a wonderful and complex prefab dome—he was struck by a program that asked for a place where "a thousand people could eat ice cream." That's my kind of revolution.

For those interested in the art schools, *Revolution of Forms* by John A. Loomis is the definitive work. ■



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Three years later, a quartet of books examine the efforts to rebuild at Ground Zero

Books

p From Zero, *by Paul oldberger. New York: Random ouse, 2004, 288 pages, $25.*

uring the first musings about iture designs for Ground Zero, a ark joke circulated through New ork's architectural community. It ent like this: If the downtown ebuilding effort were a board game, ll architects would start at square ne, except for SOM, the firm with onnections to the developer; it ould start at the finish line. Some wo-and-a-half years later, after housands of meetings and as many roposals and skirmishes, it came o pass. How did this happen?

Paul Goldberger, the *New York imes* architecture critic for 25 years, nd the *New Yorker*'s for the past even, knows most of the issues that hape New York's architecture, and nost of the players. *Up From Zero* is olored, for better and worse, both by is long view and his insider status.

Goldberger tells the history, nore or less, of the official process, aiming for an unbiased account that s both critical and sympathetic. This stance enables him to move freely hrough the complexities of the story, ut it does not allow him to engage nuch with its intensity. Still, soberly documenting this narrative is no nean feat. Thousands wrangled a seat at the table—the Port Authority and its planners, the developer and his architects, community boards, civic groups, 9/11 families, two New York mayors, the governor, the presi-dent, various henchmen, and the feuding designers, for starters. Not to mention the hype! When was an architectural process covered so extensively or breathlessly by the press? Architecture had arrived, and its coverage had all the cannibalistic mania of the era's Big Stories: O.J. Simpson, Monica Lewinsky, the elections.

It's oddly pleasurable to relive the mad carnival ride in the reading. Time is compressed, many of the gaps are filled in, and questions answered as we return to now-familiar surprises: the soaring promises and scary free falls. Remember the high hopes and wild visions followed by Beyer Blinder Belle's rushed plans with their curious mongrel authorship, the public's horrified response, the competition that dared not speak its name, the apotheosis of Libeskind and his slow dismemberment, the triumph in the memorial competition of Michael Arad, an unknown? All that kinetic energy exerted itself against the downward pull of the governor's unstated political imperatives and the developer's intent to rebuild 10.5 million square feet of unnecessary office space, which finally ended in a ravaged master plan and a jumble of designer buildings—downtown's own Columbus, Indiana.

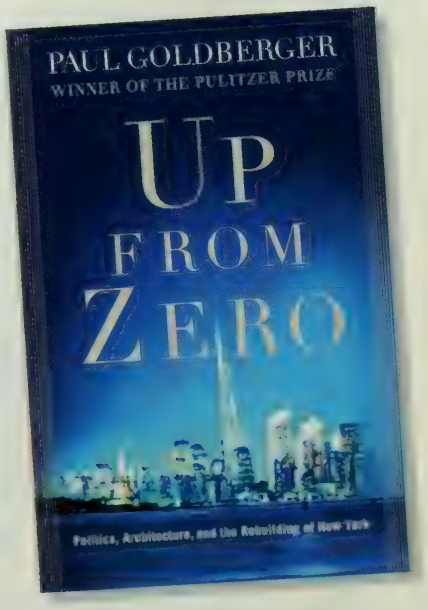
This baffling tale is what Goldberger chronicles. It is the canonical story, our riddle and our myth, and it will be repeatedly retold. It has historic character because of 9/11, but it also describes a philosophical process of dense, indeterminate causality. Goldberger shows us the cogs grinding at Ground Zero, revealing ancient mysteries: repetition (the towers' gigantism), free will (the public input), predetermination (the 10.5 million square feet, SOM), the role of great men, the cultural and political zeitgeist, how process and accidents have a way of subverting intention.

As in Tolstoy's *War and Peace*, Goldberger's hero is not the glamorous leader, like Napoleon, imposing his will on the world, but an anonymous figure—in this case, Alexander Garvin, an empiricist and impresario who was attuned to the whirlwind and orchestrated the planning effort. As if to prove the devouring power of process and the press, it appears that Goldberger's admiration for Garvin contributed to the planner's downfall. After Goldberger wrote a *New Yorker* article praising Garvin's role, a board member of the Lower Manhattan Development Corporation apparently became incensed that the governor was not given more credit. Several months later, Garvin resigned.

The other great figure in this story is Jane Jacobs, New York's most influential empiricist. Her presence is off-stage but ubiquitous. Goldberger sees her epic battles against Robert Moses as the template for the public's determination to have a say in the design of Ground Zero, and he credits her 1961 classic, *The Death and Life of Great American Cities*, with most of the big ideas that should have shaped the rebuilding: creating vitality through mixed-use, 24-hour neighborhoods, recognizing the street grid as the essential urban space, and the importance of appropriate scale.

But, as in most epic struggles, nobody ever seems to win for good. Goldberger ends his book on a note of resignation, saying, "Idealism met cynicism at Ground Zero, and so far they have battled to a draw."

Laurie Kerr



Sixteen Acres: The Outrageous Struggle for the Future of Ground Zero, *by Philip Nobel. New York: Metropolitan Books, Henry Holt and Co., 2005, 304 pages, $25.*

Philip Nobel's account of Ground Zero presents a broader, messier, and more disturbing story than Goldberger's in *Up From Zero*. Nobel ventures beyond the vast, official three-year process to show how the design of Ground Zero cap-

tured the world's imagination, with more than 9,000 designs submitted for the master plan and the memorial. He explores how the inherent limitations of Modern architecture became evident when so much—everything!—was asked of design. Nobel's narrative has the wonderful raw edginess of a handheld camera—zooming in, panning, pulling back—trying to capture it all.

Nobel is a relatively new kid on the block among New York's architecture critics, a contributor to numerous publications and a columnist for *Metropolis*. He is a younger Tom Wolfe of the architectural world, puncturing the smug, self-congratulatory pieties of the in-crowd by zeroing in with devastating detail and hip lingo against the hip. His writing has provided a welcome tonic for a discipline that often teeters on the verge of narcissism.

What works splendidly in short pieces is somewhat dicey at book length, and at times during this witty, thorough, but relentlessly urgent critique, the gentle reader starts to long for a more sympathetic commentary, a few admirable actors, or a truly compelling idea. Nobel can seem just plain ornery, for example, when he criticizes the decision to reintroduce the street grid into one of New York's most notoriously problematical superblocks, labeling it "voguish urban planning dogma." Is nothing admirable? Indeed, the only ones who come off well are those who counsel doing nothing, at least for a while: Ada Louise Huxtable, Frank Gehry, Robert Stern.

Of course, one of the process's most disturbing features was the addiction to haste—our society's headlong rush to react, to do something. We are reaping the sad results in Ground Zero's muddle. Goldberger also decries the haste, but Nobel goes further in dissecting exactly how Andrew Cuomo's challenge to George Pataki in the 2002 gubernatorial election and the looming 2004 Republican convention set the pace—politics driving policy.

The other great failure, Nobel believes, was architecture's inability to deliver when we most needed it. Perhaps the dialogue had become too self-involved during the largely peaceful years of economic boom, or perhaps the problem was more fundamental. Maybe Henry Russell Hitchcock was right when he argued that Modern architecture can't express monumentality because, in embracing an ideology of continual revolution, it had forsaken the possibility of forging a common language.

The process breaking down, politics driving policy, our architects failing us … If Jane Jacobs the mid-century urban critic creates the background of Goldberger's book, Nobel's Jane Jacobs is the current one, whose *Dark Age Ahead* (Random House, 2004) warns of a potential collapse of our society's pillars, a breakdown in our professional and other fundamental processes.

But, despite Nobel's justifiable concerns, maybe the wacky, suspect process worked, after all—and this may constitute its most outrageous aspect. Somehow, everybody got what they needed, if not what they wanted, and isn't that sort of, well, democratic and urban? True, we did not get a singular, visionary masterpiece, but the survivors got their sanctified tower footprints and the neighbors ensured the product wasn't too lugubrious. The urbanists got their partial street grid and transit hub, the Port Authority held on to its power, the nation got its tower and symbol of defiant rebirth—hopefully safer with uninhabited upper floors—and the quixotic environmentalists got windmills in a spot that had once epitomized dependence on foreign oil. And now, with Silverstein short of capital after losing his lawsuit, market forces may build residential rather than office space, as civic groups have wanted all along. Alexander Garvin, anyone?

Nobel's final insights into the relationship between process and architectural solutions are among his most compelling. In the end, we are left with bastardized forms that exactly embody the tortured procedures that created them. The Freedom Tower, he writes, "was the perfect product of an imperfect process. It had a thousand authors and none at all." And later, "architecture is never frozen music … architecture is frozen conflict." Could we have expected anything else in this polarized era? *L.K.*



Imagining Ground Zero: Official and Unofficial Proposals for the World Trade Center Site, *by Suzanne Stephens, with Ian Luma and Rod Broadhurst. New York: Rizzoli and Architectural Record, 2004, 252 pages, $60.*

Just when you thought you couldn't stand seeing another plan for Ground Zero, Suzanne Stephens's lavishly illustrated, annotated collection of more than 250 designs for the site draws you right back in. There's something riveting about seeing all these projects together, image after image.

Stephens, an architectural historian, longtime New York critic, and RECORD special correspondent, sees her book as serving two purposes. The world's architectural community responded to the destruction of the World Trade Center with an unprecedented outpouring of creative energy, almost all of which will remain on paper, never to be built. This book will act as a repository of nascent concepts, some of which may contain the germs of future masterpieces. It is also a snapshot of the global profession at this moment, as was the collection of entries to the Chicago Tribune competition, some 82 years ago. Stephens made the canny decision to go backward in time, presenting the latest, polished, crystalline

sions first, unpeeling the layers, turning, like psychoanalysis, to the tial, raw response to the trauma. any of the early projects seem like e monsters unleashed in Goya's ching *The Sleep of Reason*, with id, writhing forms towering over e defenseless city—or a collective *uernica*—an agonized shout otesting the cruelty of civilian ath. Unlike the serene proposals the Chicago Tribune competition, ose for Ground Zero responded an unprecedented urban tastrophe.

Philip Nobel contends that odern architecture has difficulty early conveying ideas without e crutch of a written text, but ephens's collection shows us that odern architecture alone is capable expressing feelings such as horror. nically, the architects' texts often lie their emotional content with osterish commentary about the y of the Future or ultra-rational nceptual explications, based in bio-gical/cyber-genic processes. But any of these visions are profoundly disturbing, and as we weigh the relative merits of the visionary against the compromised products of process and pragmatism, we have to ask whether these visions, to paraphrase Giuliani, might have been more than we could bear.

Collections enable us to study themes and their variations and the evolution of form. The designs contain a number of recurring images, many of which found their way, diluted, into the official Innovative Design Study and even into the final design. There are numerous clusters of towers, often twisted, tapered, or writhing, which merge at points. Justified in structural terms, or as a way of providing multiple means of egress, it's hard not to see these huddled forms anthropomorphically, leaning on one another in grief. Another theme is the tenacity of gigantism. Then, there is the impulse to balance the defiant or transcendent skyward gesture with the Orphic descent into the dark, damp earth. There are also blobs and bridges spanning the towers, displaying, perhaps, a compulsion to relive the dreadful moments when the airplanes struck.

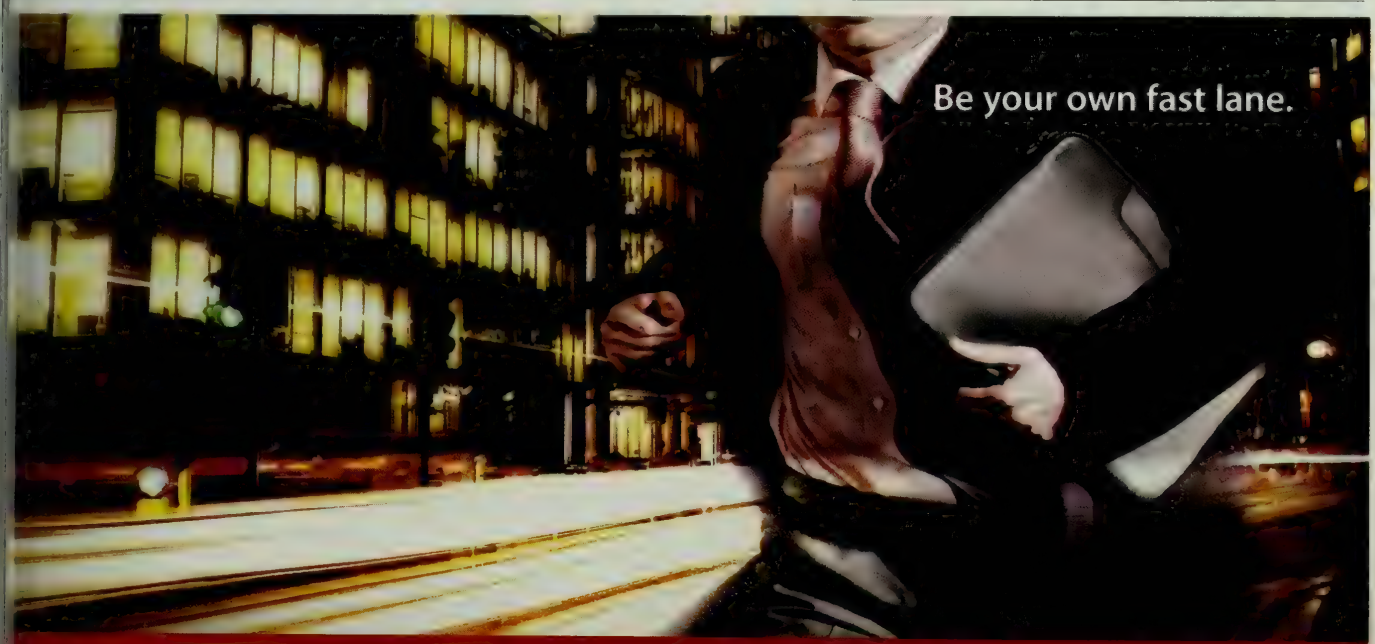
It is also interesting to ponder what is not in this collection. The designs are almost exclusively futuristic, with hardly a backward or a sideways look at the unique character of downtown Manhattan, with its thrilling cavernous streets framed by the now-modest 20-to-40-story skyscrapers from the turn of the last century. James Wines's scheme is one of the few that harnesses this remarkable urban fabric.

Little has been made of the fact that the two nominal winners, Daniel Libeskind and Michael Arad, are both children of Holocaust survivors. Having grown up in the shadow of catastrophe, it seems they were uniquely capable of expressing horror, sorrow, and then the necessary optimism of daily life. *L.K.*

Breaking Ground: Adventures in Life and Architecture, *by Daniel Libeskind and Sarah Crichton. New York: Riverhead Books, 2004, 288 pages, $28.*

For most of the 1990s, Daniel Libeskind was known for one building, the Jewish Museum in Berlin—where every crease and crevice seemed a stirring (and appropriate) reminder of destruction and dislocation. But by decade's end, when the same forms turned up in other contexts—from an art museum in Denver to a shopping mall in Switzerland—it was natural to wonder whether they were simply personal fixations. No one asked Edward Durell Stone whether his octagons were rooted in childhood fantasies, or Frank Lloyd Wright whether his cantilevers signified repressed risk-taking. But in Libeskind's case it's natural to wonder what subconscious urges led him to use acute angles no matter what the brief.

Tellingly, his memoir is as shardlike as his buildings—flashbacks within flashbacks within flashbacks. Can anyone read the story of Daniel's father's imprisonment in 1928 (as a suspected Communist), and the coda in which



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he met the occupant of the adjacent cell 20 years later, without being moved? The sentiments aren't "cornball" (a word Libeskind uses to describe himself), and the prose (with Sarah Crichton) is cogent.

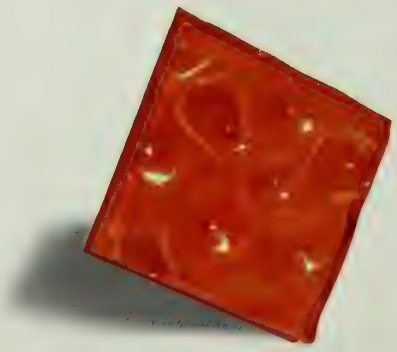
Indeed, if Libeskind had written his recollections without mentioning architecture, they might have formed a memoir on the order of *Angela's Ashes*. Libeskind's parents, Nachman and Dora, were Polish Jews who escaped the Nazis only to find themselves imprisoned in Russian hard-labor camps; released in 1942, they waited out the war in the Kyrgyz Mountains. In 1946, they fought their way back home to Lodz, where they had lost everything (and nearly everyone). Yet incredibly, pogroms aimed at the few surviving Polish Jews continued. In 1957, when Daniel was 11, the family left for Israel; traumatically, the possessions they had packed, including fine china they had hoped to sell in Israel for a foothold, had been smashed "to dust" in transit. Dora resumed her trade, stitching intricately constructed brassieres and girdles, a kind of engineering that the young Daniel admired. "She put me to work inserting whalebone props into the finely sewn garments." Two years later, the family left for New York, where Nachman became a photo-offset print stripper. Daniel notes, admiringly, that his Dad didn't need rules or T-squares to get things absolutely level.

And yet the son eschewed right angles. He had thought of becoming an artist, until his mother told him, "You can always do art in architecture, but you can't do architecture in art." He enrolled at Cooper Union, and then, as a teacher and theorist, roamed the world until he won the Berlin competition. To get the museum built, his wife Nina convinced him they would have to live in Berlin. They ended up staying 12 years. During all that time, Libeskind, priding himself on his outsider status, never learned to speak German. No wonder there were skeptics when, in his bid to win the World Trade Center commission, he styled himself a New Yorker and invoked memories of seeing the Statue of Liberty when he arrived at dawn by boat.

So much for biography. It is in the discussions of architecture that the boat starts to capsize. Libeskind describes his buildings as preordained. Yet his list of inspiration includes an unfinished opera by Arnold Schoenberg, the light and geology of the Rockies, a shattered teapot, an author's palm print, Michelangelo, and Groucho Marx—for starters. He writes ungraciously about his colleagues, characterizing his early jobs with Richard Meier as "mindless, robotic" and with Peter Eisenman as "a forced act of submission." He describes Yoshio Taniguchi's MoMA as "an aggressiv expression of corporate power" an Tadao Ando's Modern Art Museum at Forth Worth as "an anonymous concrete box." But Libeskind reserves his strongest opprobrium for David Childs of SOM, whose architecture he excoriates ("It hurts to look up at the Time Warner buildi ing on Columbus Circle"), and whose character he describes the way his parents might have talked about their captors.

But he also concedes that his plan for Ground Zero was chosen, over the selection committee's objection, because his lawyer had softened up Governor Pataki with a photo of Libeskind as a boy, in front of a haystack; supposedly, it reminded the governor of a similar childhood photo of his own. Comin from a man who repeatedly says that the 21st century calls for a new architecture "based on democratic ideals," that's a startling admission. *Fred Bernstein*

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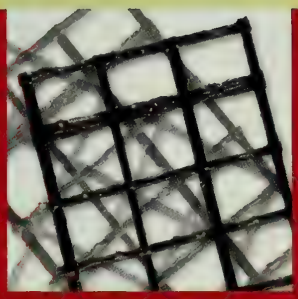
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Architectural time warp: Eisenman lays his own planes of meaning onto a historic site

Exhibitions

By Fred A. Bernstein



Copying the dimensions of rooms inside the Castelvecchio, Eisenman created five outdoor "rooms" with slanted planes and overlapping grids (above and below).



The Garden of Lost Footsteps: An Installation at the Museo di Castelvecchio, *Verona, Italy. Curated by Kurt Forster and Cynthia Davidson, through January 23, 2005.*

Peter Eisenman, who has been a part of all nine Venice Architecture Biennales, was better represented this time than ever before, not only by photos and models of his projects, but by a room-size installation in the Italian pavilion. That plywood-and-steel-pipe construction, Eisenman says, was intended to embody 500 years of architectural history—from Palladio to Peter. But it was, at best, a trifle compared to the architect's tour de force 90 miles away, in Verona, an installation also curated by Biennale director Kurt Forster.

The setting was the Castelvecchio, a 14th-century fortress, rebuilt after World War II, on the Adige River. Between 1958 and 1964, Carlo Scarpa turned the decrepit castle into a museum of antiquity, and he did so with a skill that is difficult to appreciate from photos. Scarpa began by carving a cavernous space into an enfillade of five square rooms. To separate foreground and background, Scarpa left a 10-inch gap between his new concrete floors and the building's hoary walls—the floors thus read as a series of platforms. On these platforms, Scarpa installed the museum's collection on a series of steel pedestals and shelves. His sensibility, which deals in puzzle-piece asymmetry and doubled lines, is so distinctive that it is possible, walking around the museum, to identify his contributions down to the last bracket or hinge. To Eisenman, Scarpa's architecture is all about connections, about "how the pieces fit together. He's small-scale," Eisenman says, adding, "I'm large-scale."

Invited to install a show in the museum, Eisenman visited it for the first time in more than 30 years,

Fred A. Bernstein is a New York–based journalist who writes on architecture and design and is the author of the book Renovate *(Filipacchi, 2004).*

and decided "you can't compete with Scarpa." Instead, he asked permission to build on the lawn outside the museum, but inside the castle walls. And he began with the five platforms—because, despite Scarpa's focus on details, Eisenman he created another grid, shifted about 12 degrees from Scarpa's, which shoots through the courtyard like a river that has unexpectedly changed course. The tension between the grids (no less the two philosophies) created fissures;

THE EISENMAN-SCARPA INTERACTION IS LIKE A CHARLES IVES PIECE IN WHICH TWO ORCHESTRAS MERGE THEN SEPARATE.

said, "The structures have an overall idea about them—so they're the mediating device between my work and his."

Reprising Scarpa's plan precisely, Eisenman placed five platforms of concrete, stone, and steel in front of the museum. Then within them, Eisenman located an archaeological survey of his own career. Among the motifs: red steel I-beams, from his IBA Social Housing in Berlin; contoured topography from his City of Culture in Santiago de Compostela, Spain; and square holes from his Cannaregio Town Square project for Venice. The builders did an extraordinary job of capturing architecture seemingly in motion; for those who can't make it to Verona, the handsome catalog by Cynthia Davidson (Eisenman's wife) includes working drawings. Eisenman said the installation cost about $300,000.

Eisenman didn't entirely shun the museum interior; he installed a series of architectural fragments in the trenches around Scarpa's platforms, as if inhabiting the gap between the ancient and the modern. Eisenman says his intent was "to confound the relationship of time to place by questioning which was the original project: the castle, Scarpa, or Eisenman?"

Of course you know, but the Eisenman-Scarpa interaction is like a Charles Ives piece in which two orchestras merge, then try to separate. Eisenman's own allusions are more often literary: His catalog essay includes references to Proust, Italo Calvino, and Jorge Luis Borges, and there are the usual puns (Scarpa means foot, one of the reasons, he said, that he called the installation *The Garden of Lost Footsteps*.)

Forster, for his part, describes the installation as both lucid and ludic—wordplay being de rigueur when architecture is treated as "text." But Eisenman insists it isn't necessary to understand the intellectual underpinnings to appreciate the result. "We have photos of children rolling on the lawn," he says. "They love it." Besides, if Eisenman's installation does nothing more than get a new generation of architects to take a close look Scarpa's work, it will have been a success. ■







In the Galleria della Scultura, Eisenman inserted fragments representing some of his key projects in the narrow space between Scarpa's floor slabs and the old fortress walls (above). The same red grid alluding to Eisenman's IBA housing project in Berlin runs through the outdoor displays (left and top left).

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By Randi Greenberg





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You may not be aware of archrecord.com's several Web-only features, which strive to give more depth and breadth to the architects' projects we present in the magazine. These offerings include unique panoramic tours of selected works throughout the year. The virtual walkthroughs, which consist of dynamic 360-degree images, guide you through museums like the American Folk Art Museum by Tod Williams Billie Tsien, restaurants such as 66 by Richard Meier & Partners, and retail spaces like Bisazza by Fabio Novembre.

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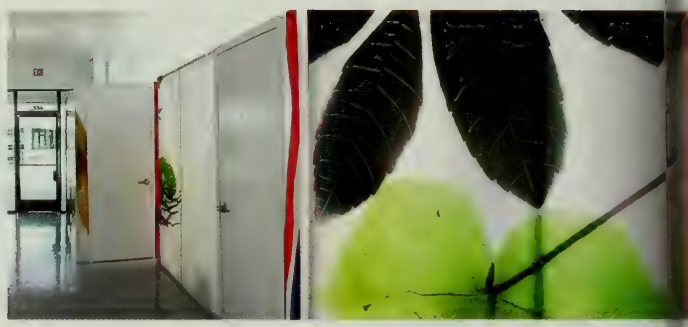
This on-site panoramic tour of the MoMA Design Store focuses on the dynamic lighting design by Johnson Schwinghammer.





be able to convey. With the virtual tour of the DIA:Beacon, located in upstate New York and featured in the October 2003 Project Portfolio, the subtle nuances of the architecture as well as the natural lighting are more easily understood. We tour several rooms within the museum, and the architecture throughout never interferes with the large-scale works by artists such as Donald Judd, Andy Warhol, Richard Serra, and Dan Flavin.

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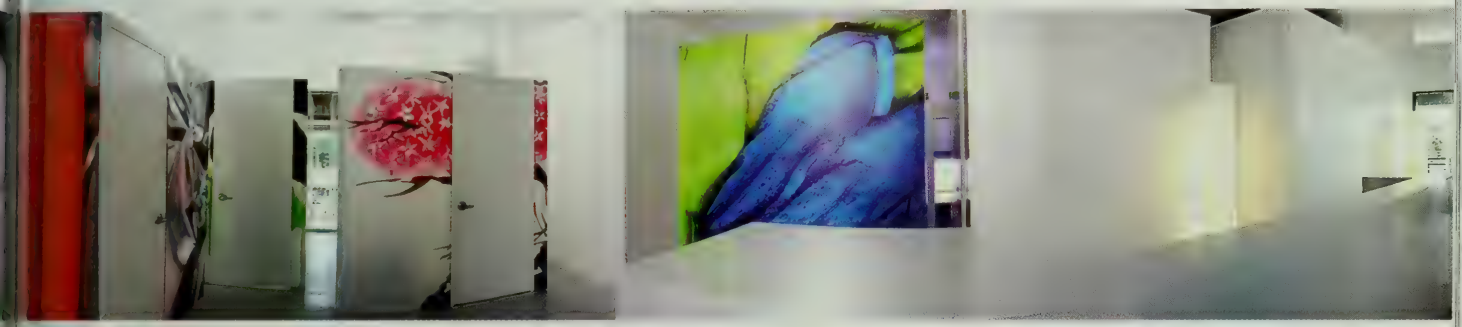


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two floors of Prada's flagship Manhattan store (above) by Rem Koolhaas
explored on our site, as is the reenvisioned strip-mall tanning salon,
ctric Sun, in Los Angeles (below) by Escher GuneWardena Architecture.





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Snapshot



y **Beth Broome**

Bowl takes skateboarding to new heights

n the outskirts of Eindhoven, the Netherlands, in the belly of a decommis-oned hangar, a totally different kind of flying machine has made its home. ne MU Bowl is a pine and birch skateboarding facility that, thanks to a ealth of resources, has taken the design of such structures to another vel. From miles around, skaters—the rippers and the wannabes—come to ab and grind, and hopefully, perfect their nosegrabs, madonnas, and ollies.

The project was spearheaded by Ton van Gool, director of Eindhoven's MU Art Foundation, who in organizing n exhibition on skate culture was seeking "the most perfect wooden skatebowl ever"—one that had both sculp-ral qualities and practical uses. To design the bowl, van Gool turned to the young Eindhoven husband-and-wife am Marc and Nicole Maurer of Maurer United Architects (MUA), who have experience with youth culture projects.

MUA's primary concern was to make a bowl that the skateboarding community—a community defined by their dependent-mindedness—approved of. If the skateboarders did not endorse it, they realized, the facility would remain tle more than a cerebral exercise. So MUA formed a collaboration with 20 students at the Eindhoven University of chnology, many of whom were enthusiasts themselves. American skateboarder Jocko Weyland hit the scene as a uest lecturer, spending three weeks coaching the students on the nuances of the sport and the prerequisites of a od bowl. Twenty different schemes resulted, from which a panel of Dutch skateboarders selected a final design: two



Snapshot

Lending new meaning to the word *radical*, MUA applied three layers of ⅛-inch plywood sheets to the bowl's frame to achieve the convex-concave terrain.

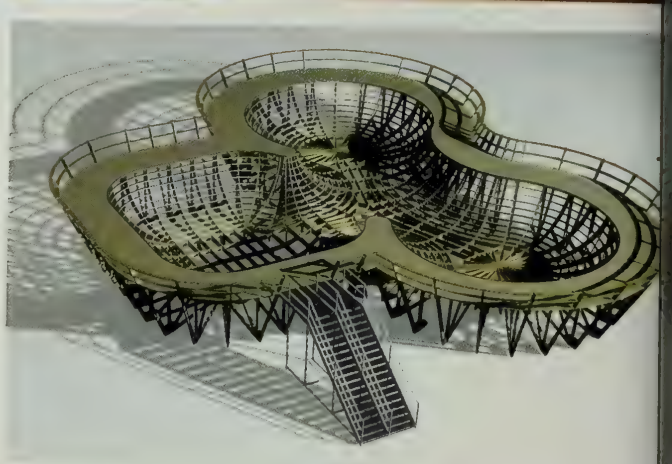


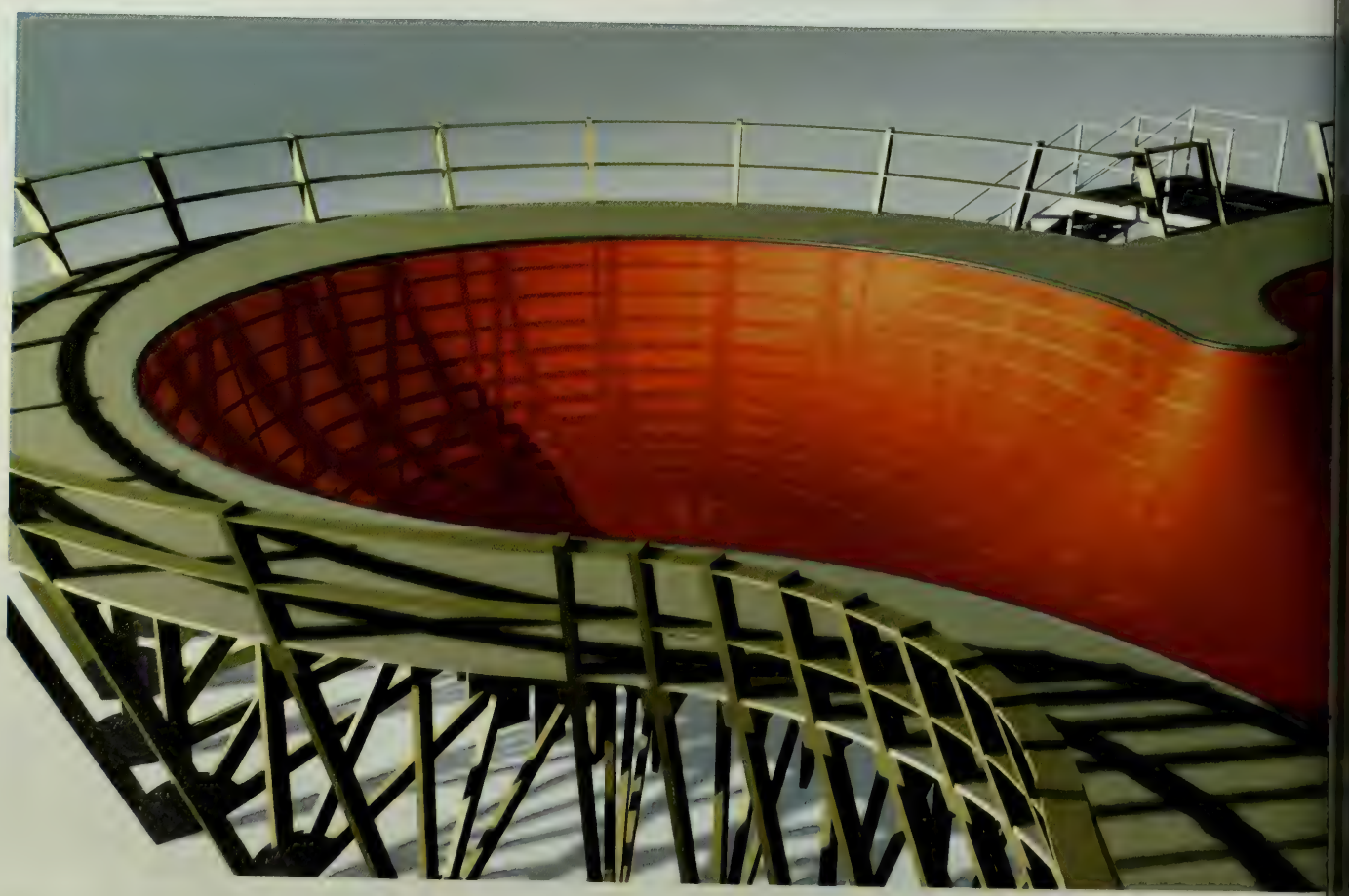
round sections connected by a "waterfall" to a rectangular deep end.

Input from the community continued into the construction phase. With religious dedication, skateboarder Marcus Kamps oversaw the carpenters who, using CAD/CAM, created the prefabricated wooden trusses and ribs that were later assembled on-site. Though a wooden surface is preferable to concrete because of its resiliency, it presented the challenge of creating double curved surfaces for the convex-concave terrain. The effect was achieved by installing two layers of ⅛-inch pine plywood in a patchwork style across the frame, topped off by a layer of ⅛-inch birch plywood.

The form, which not surprisingly takes its inspiration from the empty California backyard swimming pools where skateboarding began to flourish in the 1970s, addresses the skateboarder's principal demands. According to Weyland, the shape has good "transitions" (the curve of the walls), and good "flow," which allows for many different "lines," or paths for traversing the bowl. In short, he says, it is very "skateable," making all kinds of tricks possible, like salad grinds, feebles to fakie, and backside disasters.

Since the MU Bowl opened in 2002, it has become a central meeting place for Eindhoven's suburban youth, illustrating how basic shapes and building blocks, and the efforts of a dedicated team, can serve as a launch pad for an infinite number of future choreographies. "It works," reports Weyland, "as a beautiful object that serves its purpose to the utmost." ■





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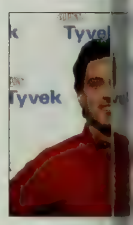
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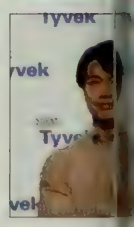

















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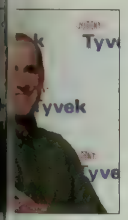
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Snøhetta discusses its new role at Ground Zero as well as input, inspiratio and an often unorthodox design process



Interview by Sam Lubell

With its commission to design the museum complex at Ground Zero, Norway-based Snøhetta has quickly received worldwide media attention. But the firm hasn't come out of nowhere. Formed in 1989, Snøhetta (named for a mountain in Norway) has completed a variety of well-received projects, including the Alexandria Library in Egypt, which recently won an Aga Khan Award for Architecture (page 96), the Norwegian Embassy in Berlin, and the Lillehamer Olympic Art Museum in Norway. The firm is now working on the Norwegian National Opera House, in Oslo, due to open in 2008, noted for a sloping roof that descends to the ground, inviting visitors up to view spectacular local vistas. Known for its innovative use of materials and for smooth integration of its projects into the landscape, the firm has also proved adroit at accommodating the needs of diverse clients, one of the reasons it got the museum complex commission, note officers from both participating museums.

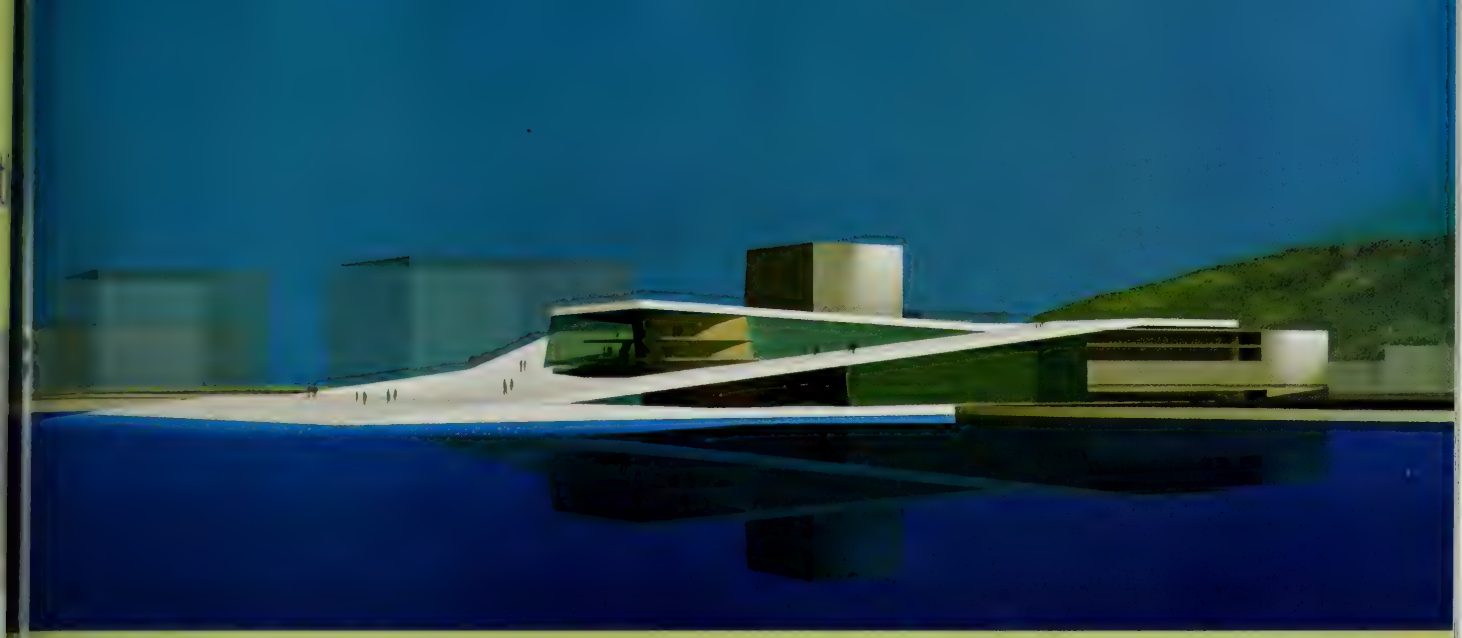
RECORD recently sat down with two of Snøhetta's partners, Craig Dykers and Kjetil Thoresen, to discuss their firm, their goals and ideals, and their plans for the Trade Center site. The discussion also included the subject of a flexible design process, which may be the wave of the future.

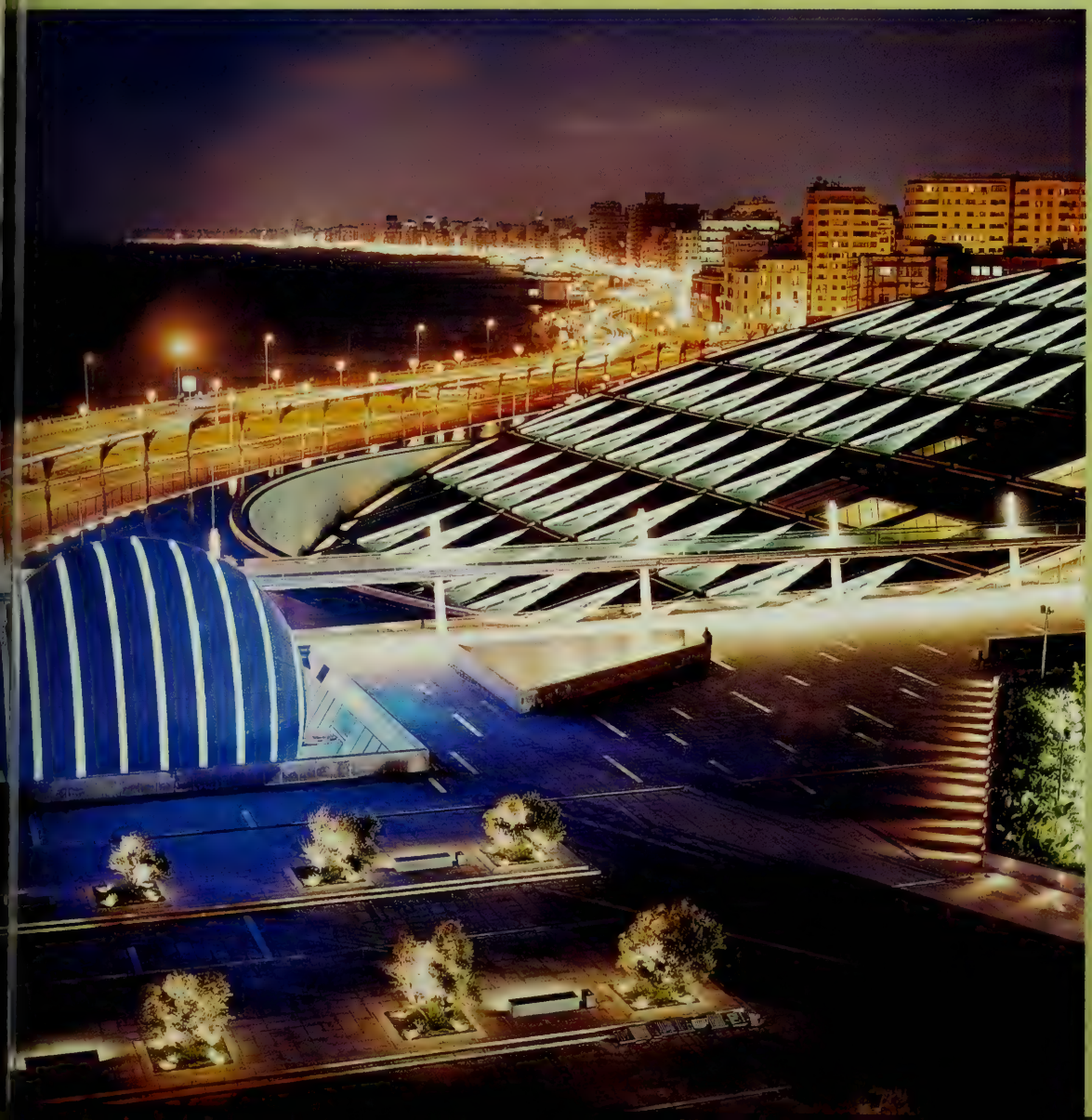
ARCHITECTURAL RECORD: *Congratulations on winning the museum complex commission at Ground Zero. Now comes the hard part: How will you incorporate the desires of so many parties into your World Trade Center design?*

Craig Dykers: We faced similar problems when we worked on the Alexandria Library project [in Egypt], which also had several levels of political influence, all the way from global and national politics to local Alexandrian needs. First of all, the architecture shouldn't try to dictate an atmosphere; it should try to allow multiple understandings to grow or exist within it. Process is a key issue—that people work together to create something. Some say this would diffuse the architecture. We believe precisely the opposite. If more than one person has to use a building, then why not have more than one person design it?

Kjetil Thoresen: This is what creative processes are about. Creativity is a game of tensions between people sitting at a table, or people living in a city.

CD: We see ourselves as facilitators. This isn't to suggest that we don't have strong architectural ideas. Our heads are full of them. But you're try-





The planned Turner Contemporary museum in Margate, England (opposite), will literally be built into the local seascape. The new Norwegian National Opera House, in Oslo (above), will welcome the local population onto its expansive, sloping roof, designed to echo the surrounding fjord. The Alexandria Library, in Egypt (bottom, dramatically lit at night), emerges from beneath the urban landscape, appearing on the outside more intimate than its large, partially buried interior space would suggest.



Other Norwegian projects include the Sandvika Cultural Center, with a foyer and rehearsal rooms that reach out into the street (left), while the Karmøy Fishing Museum (below), on an island facing the North Sea, juts into the open landscape. The Lillehamer Olympic Art Museum (bottom) utilizes local materials.





ing to find which one is appropriate and how it can merge with oth peoples' ideas about the same task at hand.

AR: *Have you started designing the museum complex? What are some your plans?*

KT: It's very dangerous to start work already. We have to force ourselv not to have plans or to make shapes and forms, because then we'll be lin iting ourselves to a small group of people and their perceptions. You ha to widen your understanding. We're having a workshop tomorrow wit the user groups and the clients. We will certainly have several more wit groups affiliated with the memorial, with our engineers and design tean with the community. We will also meet with artists, as we have on mar projects. This helps you sweep away some preconceptions about how yo might understand something. We don't try to be experts in everythin We're trying to allow those people that are best at what they do to provid direct input into the design.

AR: *Can you describe any of your preliminary thoughts on the new buildin*

KT: The space has to be respectful and mediate between two worlds. It is transition away from the hectic pace of life in the city. When you com through the building, you reduce your speed, but you have to pay respect to the city and accelerate on the way out. We will also look at New York very strong local topography and urban landscape, and of course we hav to stress remembrance, perhaps more than anything, while the buildin must complement the memorial and the site.

CD: Within the building, the importance is not just to see things on a wal but to develop an intimate interaction between visitors and the institution

AR: *Architects today, like Frank Gehry [just commissioned to design th performing arts center at Ground Zero] often create so-called signature archi tecture, imposing a certain style onto their buildings. Do you have a firm style*

KT: We don't have a signature style. What we do is to evolve every projec from its context and its content.

AR: *Can you describe your design process?*

CD: We call it organized chaos. Today we have no agenda, for example

KT: The agenda is a powerful tool, because if you put together an agenda you've told people what to talk about, especially in early design meetings We don't like to tell people what to talk about. People talk about anything basically. You start your design process just by trying to get under you own skin and under the skin of others.

CD: Words are very important. I think many architects either ignore o misuse language. We tend to rely on objects and models. But before tha process begins, there needs to be at least some common understandin with language. Being able to talk about what's important to you.

AR: *What are some defining characteristics of your present work?*

CD: I believe there is a dialogue between nature and human nature.

KT: Whatever you do and everywhere you turn, you have to deal with nature. There's a big difference between reacting to it and physically immersing yourself in it. Where engineers have traditionally built walls between construction and the sea, our Turner museum [due for completion in 2007], for instance, is built within the seascape. To actually interact with nature directly is a change of mind-set.

AR: *What do you find most interesting about architecture today?*

CD: That we have the chance today to interact across borders much more than we have in the past, and in a much different way. People like Mies van der Rohe came to America 40 or 50 years ago. But it was very differ ent. It was about exporting ideas. Now we're talking about interacting.

AR: *When will you have a preliminary design? Is the timeline too tight?*

KT: We have been asked to have a design by February. Sometimes strict deadlines are good. The pressure, the tension that you feel in a group can help. In reality, everything can be doubted. There is not only one solution to every problem. ■

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2004 Aga Khan Award for Architecture:

Promoting Excellence in the Islamic World

By Sam Lubell with James Murdock

The Aga Khan Award for Architecture, which since 1977 has encouraged successful building practices and promoted local culture in the Islamic World, was at press time scheduled to announce its 2004 winners on November 27 in Delhi, India.

The seven victorious projects were chosen from a field of 378 nominees by a nine-person jury (listed below). In choosing the winners, notes juror Farshid Moussavi, of Foreign Office Architects in London (and an Iranian native), the panel considered the project's social impact, the integration of private and public spheres, and expressions of power, individuality, and historical memory. But by far the chief component was simply architectural excellence. "It's about how do you crystallize the forces that shape an architectural project into form?" says Moussavi, who was impressed with the overall quality of the work she saw in a volatile region where architecture is often ignored by the western public. Short-listed projects are visited by jurors after being narrowed down by various architects, engineers, and scholars with intensely detailed research on performance, cost, and design concepts, among other criteria.

This year's winners, says awards secretary general Suha Özkan, included more experimental and contemporary work than in past cycles (the prizes are given out every three years), marking a concerted effort to expand the program's boundaries. These included a prototype for sandbag structures, a school building in Burkina Faso, and a sleek, highly adaptable modern house in Turkey.

"The awards are not only about celebrating the heritage of a certain culture, but celebrating the new ventures coming out of a place," notes Moussavi, who also points out that the jury had the benefit of a very diverse membership that included philosophers, artists, engineers, architects, and historians. "I think it was very healthy to have different perspectives. It becomes tougher to talk about design when faced with a nonarchitect, and I think that's very exciting."

The awards were originally established by His Highness the Aga Khan, the Imam of the Shia Imami Ismaili Muslims. Awards total $500,000, making this the largest architectural prize in the world. Winners can include projects in contemporary design, social housing, community improvement, restoration, reuse, area conservation, landscape design, and improvement of the environment.

Master Jury

Ghada Amer, *artist, New York;* **Hanif Kara**, *partner, Adams Kara Taylor Structural and Civil Engineering Consultancy, London;* **Rahul Mehrotra**, *executive director, Urban Design Research Institute, Mumbai;* **Farshid Moussavi**, *partner, Foreign Office Architects, London;* **Modjtaba Sadria**, *professor of Cross-Cultural Relations and East Asian Studies, Chuo University, Tokyo;* **Reinhard Schulze**, *professor of Islamic Studies, University of Bern;* **Elías Torres Tur**, *partner, Martínez Lapeña-Torres Arquitectos, Barcelona;* **Billie Tsien**, *partner, Tod Williams Billie Tsien Architects, New York;* **Jafar Tukan**, *principal, Consolidated Consultants for Engineering and the Environment, Amman.*





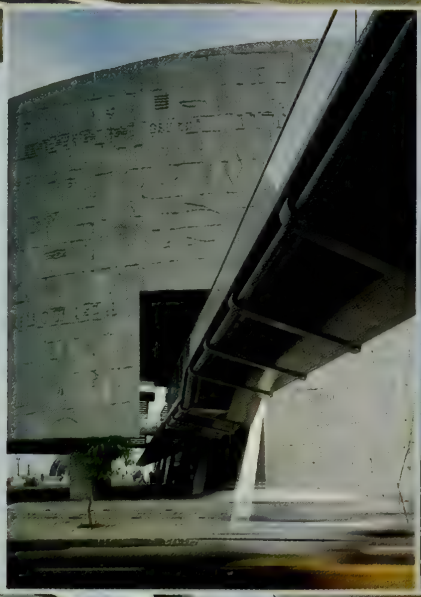




Primary School, Gando, Burkina Faso. Diébédo Francis Kéré

Diébédo Francis Kéré, the first person from the village of Gando to study abroad, was convinced that education would be the cornerstone of his people's advancement; so he decided to design a school for his village and raise the money to build it himself. The building's design and construction was as simple as possible to avoid the need to transport materials to the rural site. Three classrooms are arranged linearly and separated by covered outdoor areas. Load-bearing walls are made from earth blocks. Concrete beams run the width of the ceiling, and lightweight steel trusses support a corrugated metal roof, which overhangs the building to provide shade and help regulate indoor temperatures.









Bibliotheca Alexandrina, Alexandria, Egypt. Snøhetta Hamza Consortium

Commissioned in 1988, the Bibliotheca Alexandrina is a revival of Alexandria's legendary ancient library. Its basic form is a tilting disc, with four levels below ground and seven above ground, which helps minimize the building's scale so visitors are not overwhelmed by it. The exterior wall is clad in 4,000 granite blocks that are carved with letters from the world's alphabets. The circular diaphragm wall, 541 feet in diameter and 115 feet high, is among the largest of its kind in the world.

estoration of
e Al-Abbas Mosque, Asnaf,
emen. Marylène Barret

e mosque's modest stone and mud-brick terior walls conceal a spectacular sacred erior, the highlight of which is an elabo- ely painted and gilded ceiling. But the osque, nearly 875 years old, was showing age: Its ceiling was warped and suffered m rot. Traditional construction techniques d materials—such as a mortar made of e and volcanic aggregate—were used oughout the restoration. Pieces of the iling that couldn't be conserved were nsferred to a museum, their memory arked by leaving the spaces plain.















Petronas Towers, Kuala Lumpur, Malaysia. Cesar Pelli & Associates

The most significant landmark in Malaysia, and until recently the world's tallest buildings, the Petronas Towers represent traditional Islamic forms mixed with local building materials and technological know-how. The footprint of each tower is an interlocking square that forms an eight-pointed star, which has religious significance for Muslims. Conceived of in 1981, the towers are located in the heart of Kuala Lumpur's commercial district; they have become symbols of contemporary architecture in Malaysia.





Old City of Jerusalem Revitalization Program. OCJRP Office

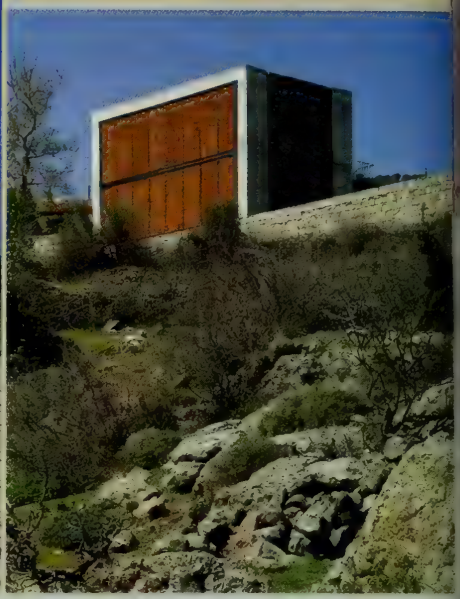
The revitalization is a comprehensive project designed to restore the urban fabric as well as improve the quality of life for residents in Jerusalem's Old City. Since 1995, more than 160 buildings—half of them residential, the remainder a mixture of public and commercial structures—have been stabilized or completely restored throughout the 215-acre district. Buildings are selected for restoration based on the severity of their physical condition. Local architects and engineers are being trained in preservation to ensure the buildings are properly maintained following restoration.









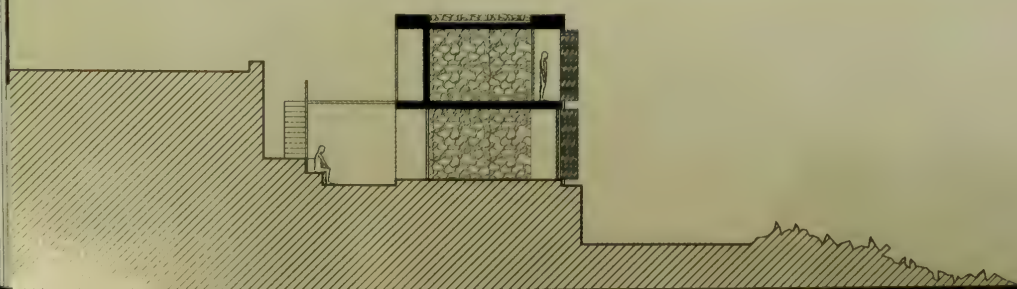






B2 House, Ayvacik, Turkey.
Han Tümertekin

Two brothers wanted to build a weekend retreat where they could find beauty, tranquillity, and seclusion. Their two-level house is embedded in the slope of a mountainside. A living room dominates the bottom level, while two bedrooms occupy the top; the levels are connected only by an external staircase. Glass sliding doors form the back wall of the house and allow sweeping views down to the Aegean coast. Judges felt that the house embodied a sense of perfection and well-being.



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Sandbag Shelter Prototypes, various locations. Cal-Earth Institute, Nader Khalili

The sandbag shelter prototype is a modern take on a timeless construction method. Similar to adobe or ice blocks, the sandbags are filled with earth and arranged in a circular course that is corbeled at the top to form a dome. To prevent shifting, the sandbags are secured with barbed wire. If covered with stucco, the shelter can become a permanent building. Sandbags and barbed wire are often the materials of war, but used in this context they can provide housing for refugees. The judges felt this project was so important that they changed the competition's rules (which didn't include prototypes) to recognize it.

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Neon Tigers

Photographs by Peter Bialobrzeski

With streaking tail lights and ghosts of fleeting figures, Peter Bialobrzeski's recent photographs portray the rapidly emerging megalopolises of Southeast and East Asia. Taken mostly at dusk, his images register the chillingly pale luminosity and surreal hues of neon, tungsten, and fluorescent sources glowing through waning daylight and milky smog.

"The Tiger Cities mushroom like metastases," observes Florian Hanig in the introductory essay to Neon Tigers *(Hatje Cantz Verlag, 2004), a book of Bialobrzeski's Asian images. Unlike the relatively low-lying sprawl of Los Angeles or Tokyo, the burgeoning urban phenomena of Hong Kong, Shanghai, Singapore, Bangkok, and Kuala Lumpur, Hanig notes, "do not expand only in width, but also in height." Threaded with networks of raised thoroughfares and sky corridors, they exist as cities literally on many levels.*



The Blade Runner*esque, speeding, techno-utopian character of these high-density, high-rise places—marked by jolting contrasts between the old and the continually evolving new—inspired Bialobrzeski. Before working on* Neon Tigers, *the German photographer embarked on an assignment to illustrate a magazine article by the sci-fi author William Gibson. As Bialobrzeski recalls, "I realized at that point that I wanted to shoot Bangkok the way Gibson writes."*

Then and in Neon Tigers, *the photographer captured visions of the future using, ironically, an old-fashioned, analogue technique, relying on a 4-by-5-inch view camera and long exposures. He says he never manipulates his images on a computer, but instead favors "shooting in weird light," catching these megacities in the fleeting moments before they transform themselves even further.* Sarah Amelar

Kuala Lumpur (opposite)

Hong Kong (above)









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Design Vanguard 2004

Shifting terrain in an Emergent World

Architects remap the line between nature and culture

By Mark C. Taylor

With the death of Jacques Derrida, an era formally came to an end. For almost four decades, those French veterans of 1968 set the terms for critical debate and profoundly influenced artistic practices. Cultural critics found in the writings of Derrida, Gilles Deleuze, Jacques Lacan, and Jean Baudrillard resources to develop theoretical interpretations of what architects had labeled *postmodernism* more than a decade earlier. Theory became the rage in departments of humanities and triggered culture wars still echoing through halls of power. Nowhere was this more evident than in architecture. In classrooms and journals as well as at conferences throughout the world, architects discussed philosophy as never before. The 1988 *Deconstructivist Architecture* exhibition at the Museum of Modern Art in New York made clear how deeply theory influenced the practice of many leading architects. Whether you were for it or against it, theory was unavoidable.

By the 1990s, the rapid proliferation of computers and network technology in design studios led to a shift in the critical terrain. Derridean interventions gave way to Deleuzian folds in structures and works that were driven as much by software as architectural program. As information systems and technologies spread, biological models and metaphors displaced the mechanic paradigm. The importance of this development extends beyond any fascination with biomorphic forms and morphing blobs. What is at stake is a fundamental change in our understanding of the infrastructure of both the natural and artificial world. For example, in recent years, we have discovered that biological systems and information systems share a common structure and operational logic. This insight makes it necessary to reconsider the relationship between nature and culture. In a world of genetic engineering, cloning, and implants, where does the natural end and the artificial begin? The generation of 1968 has little to offer as we attempt to answer these questions.

This year's Design Vanguard architects come from six countries, but share many common concerns. They do not

Mark Taylor is a visiting professor at Columbia University and author of Confidence Games: Money and Markets in a World Without Redemption.



1

Design Vanguard 2004:

1. nARCHITECTS
2. Patterns
3. Architecton
4. Alejandro Aravena
5. Contemporary Architecture Practice
6. Byoungsoo Cho Architects
7. Christoff:Finio Architecture
8. Masaki Endoh/EDH
9. Antón García-Abril
10. dECOi
11. Plasma Studio



2

PHOTOGRAPHY: © FRANK OUDEMAN (1); BRADLEY WHEELER (2)

merely break with the simplicity and rectilinearity of Modernism, but adapt it to meet different needs and changing circumstances. They tend to prefer complexity rather than simplicity, horizontality rather than verticality, continuity rather than discontinuity, open rather than closed systems, and emergent rather than fixed structures. These architects are critically informed without being driven by theory. Moreover, their use of software in design is much more subtle and sophisticated than their immediate predecessors'. This work is not architecture for the sake of software but software for the sake of architecture.

When surveying the work of these 11 firms, what is most striking is their sustained investigation of the interrelation of natural and built environments. They are not merely trying to develop green architecture but are involved in the much more difficult and important exploration of the isomorphism—formal or structural similarity—between natural and artificial systems. If physical, chemical, and biological processes are actually information processes, then natural and artificial environments can enter into genuinely interactive relationships. The nature of the interaction in these projects varies from the simple to the complex.



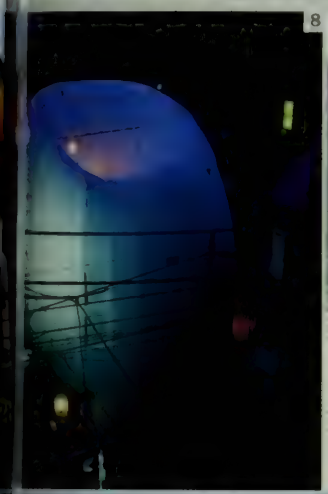
The work of Byoungsoo Cho Architects shows sensitivity to the interplay between natural topography and building morphology that is also characteristic of several other Vanguard firms. The continuity between structure and setting is so subtle that the buildings are almost inconspicuous. In structures that recall Ando's work, Cho effectively integrates exterior and interior as well as concrete and wood. In some cases, concrete is grained to suggest slats of wood; in other cases, Cho uses raw plywood to create an effect as different from Gehry as natural stone is from chain-link fence. Christoff:Finio's Beach House both extends and complicates Cho's use of materials and exploration of the interplay between outside and inside. Artfully situated on a thickly wooded dune near the ocean, this house makes effective use of wood to form stacked volumes that create enclosed outdoor spaces. By bringing the outside in, the interplay between exteriority and interiority becomes considerably more.

Though the work of nARCHITECTS differs significantly from that of Cho and Christoff:Finio, *Canopy*, an installation in the courtyard of P.S. 1 Contemporary Art Center in New York, and *Dune Terrace*, a proposal for a museum in the Egyptian desert near the pyramids, both present thoughtful investigations of nature and artifice. *Canopy* creates a "deep landscape" that is, in effect, an artificial natural environment. Made of 1,100 bamboo poles carefully bent into slender arcs, the project gives one the feeling of being beneath a breaking wave or in a rain forest. In rooms open to the sky—housing a wading pool and a gravel beach—the architects simulated different climatic environments by producing intermittent showers and misty fog. In the arid sands of Egypt, they formed waves not with flexible bamboo and mist but with rippled sand that seems to float the Koolhaas-like geometric structure rising above it. Ancient pyramids appearing on the horizon beneath the museum seem no

more permanent than the drifting sands.

The interaction between form and topography functions differently in the work of dECOi. In the design for an exhibition center overlooking the caldera of Taal volcano in the Philippines, dECOi principal Mark Goulthorpe creates a series of flowing spaces carefully crafted to fit the contours of the terrain. "A series of curling vaults," explains Goulthorpe, "folds the building softly back into the terrain, creating a protective carapace to volcanic debris and a filter to the harsh environment, allowing penetration of morning light and afternoon breeze." The figure of the fold has, of course, been a preoccupation of architects ever since they discovered Deleuze over a decade ago. The deployment of the fold in contemporary architecture suggests the importance of continuity and even integration rather than discontinuity and fragmentation. The rectilinearity of Modernism and the angularity of Deconstructive architecture give way to supple convolutions that enrich rather than erase differences.

Ali Rahim uses open structures to create the context for "emergent behaviors and events." In his Reebok store in Shanghai, he modulates surfaces and continuously varies structures to articulate spaces where programmed and unprogrammed events can emerge. In an ecologically sensitive project, Rahim has designed a weekend home in London to regulate interior and exterior flows. The gradient of performative spaces controls circulation in the house, and a system of troughs and channels irrigates the surrounding land according to seasonal conditions.


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The most imaginative and suggestive project among this year's Vanguard firms is a work of sculpture rather than architecture—Marcelo Spina's *Snake-Rice*, realized in Icheon, Korea. Though the relation between art and architecture has always been uneasy, several of the Vanguard architects freely appropriate sculptural works. Masaki Endoh and Masahiro Ikeda, for example, explore the geometry of the ellipse to build what appears to be a live-in sculpture. This flexible form is defined by elliptical rings placed along a horizontal elliptical orbit. The outside wall, which is made of fiber-reinforced plastic, produces a sense of ephemerality and impermanence. The work of Antón García-Abril, by contrast, appropriates sculptural precedents in buildings whose monumentality insists on permanence. The use of massive blocks of granite ashlar whose rough-hewn surfaces bear the marks of quarrying and cutting in his Musical Studies Center is reminiscent of Michael Heizer's signature work. His 4,000-seat Bull Ring, located in Pinto, Spain, looks like an architectural rendering of Richard Serra's *Torqued Ellipses*.

While some architects appropriate sculpture to create architecture, Plasma Studio expands architecture to fashion sculpture. The firm's installation in London, entitled *Crumple Zone*, circumvents a linear design process to create structures that seem substantial yet appear to float. These novel forms are intriguing prototypes for architecture.

What sets *Snake-Rice* apart from other projects, though, is Spina's successful creation of a work that is both interactive and emergent. The sculpture consists of 11 polished aluminum elements assembled by lateral combinations and positioned on a gentle slope of a valley with dense foliage. This work produces the effect of rippled waves that suggest the green rice field landscape characteristic of this part of Korea. Spina explains, "Generically, *Snake-Rice* could be understood as an emergent and flexible system of sculptural assembly. Its snakelike modular pieces insinuate the possibility of growth, expansion, reconfiguration, and proliferation." This work is not merely the setting for emergent events, but is itself an emergent event. *Snake-Rice* might best be understood as a laboratory experiment for a new kind of architecture in which structure and site interact to create emergent forms that constantly adjust and adapt to the environment.

In today's climate of fear, disaster always seems near. Though the threat of political turmoil and religious fundamentalism cannot be minimized, the greater danger to our future is environmental disaster. These problems are global but solutions must be local. While the projects recognized this year do not explicitly address issues like global warming, pollution, and dwindling water supplies, their concern about them is evident. In the absence of responsible theoretical reflection on these pressing issues, it is encouraging to see a new generation of architects wrestling so creatively with new ways to reconfigure the increasingly complex interrelation between natural and built environments. ■



nARCHITECTS pursues the variables of building type, finding hybrid solutions

By William Weathersby, Jr.

Architect: nARCHITECTS
Location: New York City
Founded: 1999
Design staff: 4
Partners: Eric Bunge, AIA; Mimi Hoang
Education: Bunge: Harvard GSD, M.Arch., 1996; McGill University, B.Arch., 1991; Hoang: Harvard GSD, M.Arch., 1998; MIT, B.S.Arch., 1993
Work history: Bunge: Practice—Diller + Scofidio, 1999; Kennedy & Violich Architecture, 1996–98; Paul Andreu/Aeroports de Paris, 1993–94; Academic—Parsons School of Design, 2002–present; Columbia University, 2001–2003; Rhode Island School of Design, 2000–2001; Hoang: Practice—Steven Holl Architects, 1999–2001; Leers Weinzapfel, 1998–99; Teun Koolhaas, 1993–94; Academic—Yale University, 2003–present
Key completed projects: *Canopy*, MoMA/P.S.1 Young Architects Program, Queens, New York, 2004; Renovation, The Kitchen, New York City, 2004; Broadway penthouse, New York City, 2004; First Street house renovation, Brooklyn, New York, 2004; Installation, *New Hotels for Global Nomads*, Cooper-Hewitt, National Design Museum, New York City, 2003; Sculpture installation, *Second Means of Egress* (artist Sarah Sze), Washington, D.C., 2003; Installation, *Slot Machine*, ArchiLab, Orleans, France, 2002; Window-Box-Wall, New York City, 2001; Floor installation (artist Do-Ho Suh), Lehman Maupin Gallery, New York City, 2000
Key current projects: Residential condo building, New York City, 2005; Exhibition design, *Earth from Above*, American Museum of Natural History, New York City, 2005; Installation, Artists Space, New York City, 2005; Installation, Henry Urbach Gallery (with artists Aziz+Cucher), New York City, 2005; Varick Street loft renovation, New York City, 2005
Web site: www.narchitects.com

Evoking the language of mathematics, in which *n* represents an indefinite number, partners Eric Bunge and Mimi Hoang named their firm nARCHITECTS to suggest the variable dimension in their work. "It's meant to show that our designs can be responsive and flexible, open to change," Bunge says. Hoang adds that *n* also represents the fluctuating number of design team participants on each project: While their staff recently doubled to four, the principals often work in collaboration with other firms (such as fieldOFFICE) or contemporary artists including Do-Ho Suh, Barbara Steinman, and Sarah Sze.

Bunge and Hoang met in the mid-1990s as students at the Harvard Graduate School of Design. Both later gained experience with progressive Manhattan firms known for their strong conceptual bent—Steven Holl Architects in Hoang's case, Diller + Scofidio for Bunge, where he served as project manager for that firm's Blur Building. Conceptual rigor paired with methodical research remains a hallmark of the nARCHITECTS studio, complemented by the principals' ongoing exchange of ideas nurtured in academia: Bunge has taught at Columbia and Parsons School of Design, while Hoang teaches at Yale.

Rather than focusing on formal architectural language, the partners prefer to develop hybrid building types and innovative construction techniques. "We challenge conventional notions of program, type, and context," Bunge says. The duo's audacious competition entries include an Egyptian museum that rethinks circulation patterns, the building's length marking off a timeline of ancient history. Hotel Pro Forma, meanwhile, proposed a permanent home for a Danish performing arts group that merges hotel and theater spaces, with passage and admission fees among areas controlled by an electronic card system. "We like to carefully think through the complex identities of public institutions," says Hoang, "imagining unexpected events and uses in the lives of connected spaces."

nARCHITECTS made a big splash last summer with *Canopy* (opposite), a temporary installation in Queens, New York, that was the winning entry in the annual Museum of Modern Art/P.S. 1 Contemporary Art Center Young Architects Program. Though the elegant structure was built from a simple material with basic tools, the architects had engineered its complex structure and geometry on computer (including a dazzling virtual walkthrough that plotted changing light conditions and the venue's use by five patron types, from party animal to art lover). They spent six weeks testing each arc type to determine maximum span, minimum bending radii, and overlap dimensions. Via thorough legwork, the architects achieved maximum effect with an economy of material means.

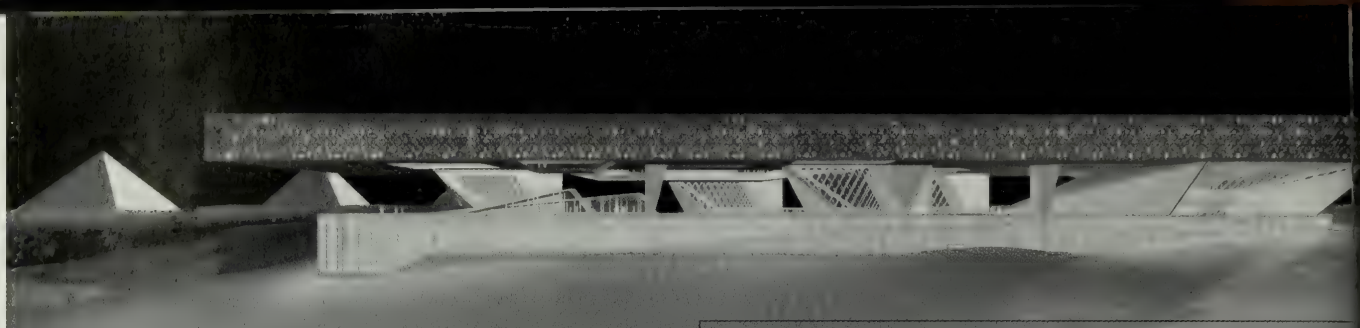
To support the office, the firm pursues residential projects from loft renovations to furniture designs. Its first commission for a freestanding building is a six-story condominium complex in New York City. One recent project, Window-Box-Wall, synthesizes the partners' experimental approach to program and form by compressing a variety of audiovisual equipment into one reconfigurable media center. Dubbed by the client his "digital fireplace," it is a sculptural collage of wooden containers and mesh screens. The unit's 1,600 pieces were modeled in 3D, and the spacing of its slats is based on the Fibonacci sequence. That's detailing to the nth degree. ■



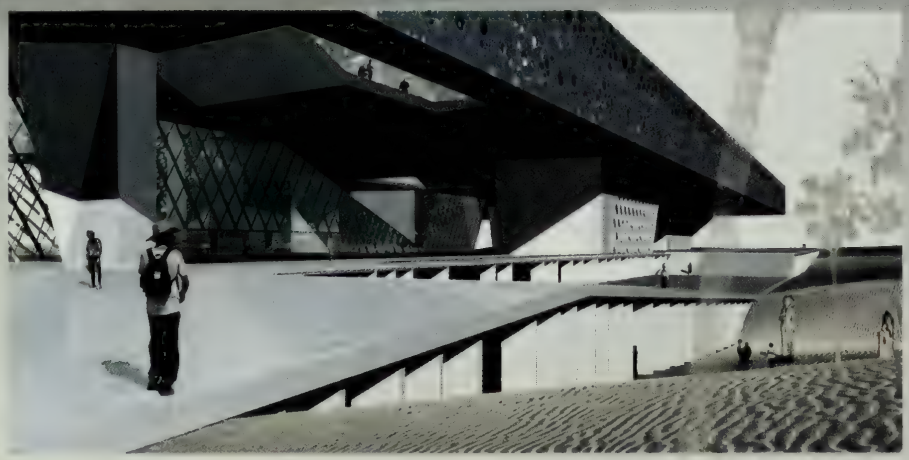


Canopy, MoMA/P.S. 1, Queens, New York

To turn the art center's courtyard into an outdoor party and play space for 10 weeks, a grid of arched bamboo poles was constructed on-site over seven weeks by Hoang, Bunge, and a team of students, recent grads, and friends who volunteered. The structure used 30,800 linear feet of freshly cut bamboo spliced and bound together by 37,000 linear feet of stainless-steel wire.



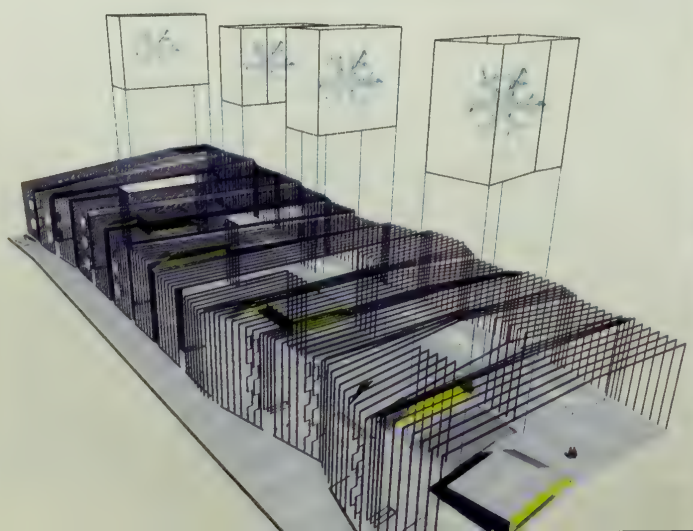
Grand Egyptian Museum, Giza, Egypt

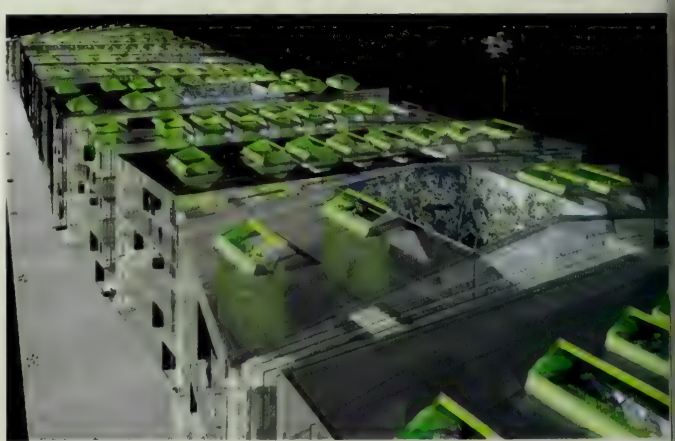


A 2002 competition entry titled *Dune Terrace* proposes modes of circulation outside the typical museum format. A 1,000-foot exterior terrace offers views of the nearby pyramids. Five lobby galleries lead to permanent collections in a floating bar (above), or to a temporary gallery, convention center, and sculpture gardens (left). The collection is organized chronologically from west to east.

Thermal Bridge, Aomori, Japan

A proposed 200-unit housing complex for a region of Japan with heavy snowfall "balances a suburban desire for seclusion with an urban desire for density," says Bunge. An insulating layer of housing spans above an interior landscape covering the maximum allowable footprint. All apartments receive light and ventilation from three sides, with views both outward and to interior courtyards.





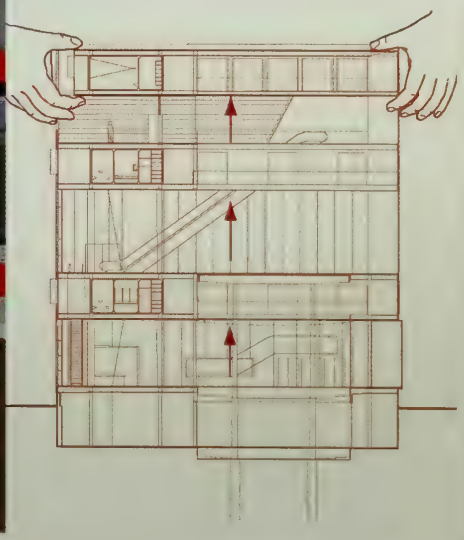




Hotel Pro Forma, Ørestad, Denmark

Collaborating with fieldOFFICE on this competition entry, Bunge and Hoang designed a hybrid hotel and entertainment venue for the Danish performance group Hotel Pro Forma. The building balances the specific and flexible requirements of hotel and exhibition functions. A hydraulic stage interconnects floors, permitting simultaneous presentations and social interactions.







Christoff:Finio Architecture is building a New York practic by building

By Charles Linn, FAIA

Architect: Christoff:Finio Architecture
Location: New York City
Founded: 1999
Design staff: 5
Principals: Martin Finio and Taryn Christoff
Education: Finio: Cooper Union, B.Arch., 1988; Christoff: Illinois Institute of Technology, B.Arch., 1984
Work history: Finio: Practice—Tod Williams Billie Tsien and Associates, 1990–99; Academic—Yale University, 1999–present; Columbia University, 1996–99; Christoff: Practice—Freelance, 1993–97; Paul Segal Associates, 1988–93; Swanke Hayden Connell, 1984–85
Key completed projects: Store for Catherine Malandrino, New York City, 2004; Fort Greene Residence, Brooklyn, N.Y., 2003; Angelo Donghia Foundation Materials Study Center, Parsons School of Design, New York City, 2002; Beach House, Long Beach Island, N.J., 2001
Key current projects: Photographer's Penthouse, New York City, 2004; Heckscher Foundation for Children, New York City, 2005; Private House, Sullivan County, N.Y., 2005; Calypso Store, Paris, 2005
Web site: www.christofffinio.com

Christoff:Finio Architecture's principals, Martin Finio and Tary Christoff, aren't the least bit esoteric when it comes to speakin about the influences and ideas that underlie their work. "The thi that binds our work together," says Finio, "is that both of our educatio [at IIT and Cooper Union] were based on a culture of craft and makin things. Architecture is most manifest in construction."

After school, the architects both got jobs in firms that taug them much about building things. At Swanke Hayden Connell and Pa Segal Associates, Christoff worked in all phases of the design and co struction. "I got a strong enough core that I could move forward with m own work," she explains. Finio spent 10 years working at Tod Willia Billie Tsien and Associates, which he describes as "my graduate school edu cation." That exposed him to everything that goes on in an office where premium is placed on the exploration of materials and construction sy tems. That said, the partners agree that they don't approach their projec with any one particular set of ideas. They cite Eero Saarinen as an influ ence because, as Finio says, "you never knew what was going to come ou of him. That is remarkably different than someone who finds their ow niche and plows ahead with it."

The firm's attention to craft in construction is especially visible i two of its built projects: the Beach House, in Long Beach, New Jersey, an the Angelo Donghia Foundation Materials Study Center at the Parson School of Design, in New York. For example, at the Beach House (oppo site), they eliminated all the moldings that normally border windows, doo frames, and corners, pushing the level of craftsmanship to a height seldom seen in builder-constructed houses. At the exhibi tion space in the Donghia Materials Study Cente (page 120), the resin display-support surfaces han from sheet metal sleeves that are recessed into ceil ing pockets. Glass partitions are also recessed int ceiling pockets and anchored by suction cups.



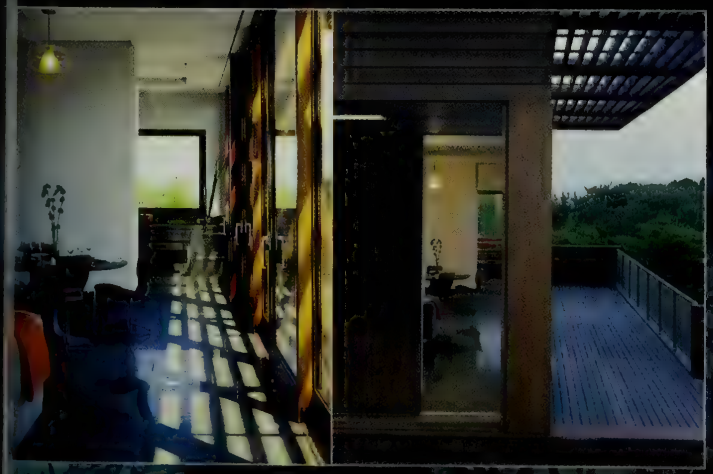
Christoff:Finio's entry for City Lights, a competition to redesign New York's streetlights.

The firm has also done several competi tions as a way of exploring new directions, and two have brought it attention. The team's entry for City Lights, a competition to find alternatives to th city's ubiquitous cobrahead-style streetlights, mad finalist (left). Their entry for an Aqua Center i Aalborg, Denmark (page 121), didn't place, bu later it found its way into the *Liquid Stone* exhibi tion currently at the National Building Museum That's not a bad consolation prize.

These days, the firm is keeping busy o the construction of office space for the Heckscher Foundation for Children in a former town house i New York City. And it's doing what young firms do, what Finio calls the "on-the-job training" necessary to stay in business. "You're exposed to some no terribly wonderful things about running an office," he says. "But it's *our* office, and that's great." ■







Beach House, Long Beach Island, New Jersey

Almost every successful new practice has had a project that prompted its principals to quit their day jobs. The Beach House is the one that started it all for Christoff:Finio. Wetlands restrictions and a jammed program led them to stack rectangularly shaped spaces on top of each other. These volumes were punctured, divided, and separated to form decks, balconies, and view corridors.





Donghia Study Center, New York City

When the Angelo Donghia Foundation gave the Parsons School of Design a grant for a new Materials Study Center, Christoff:Finio set to work transforming a dull studio into a space that includes computer lab, classroom, offices, and this gallery space. Resin panels with colored interlayers are used to support display boards. The metallized polyeste curtain can be drawn for exhibitions.



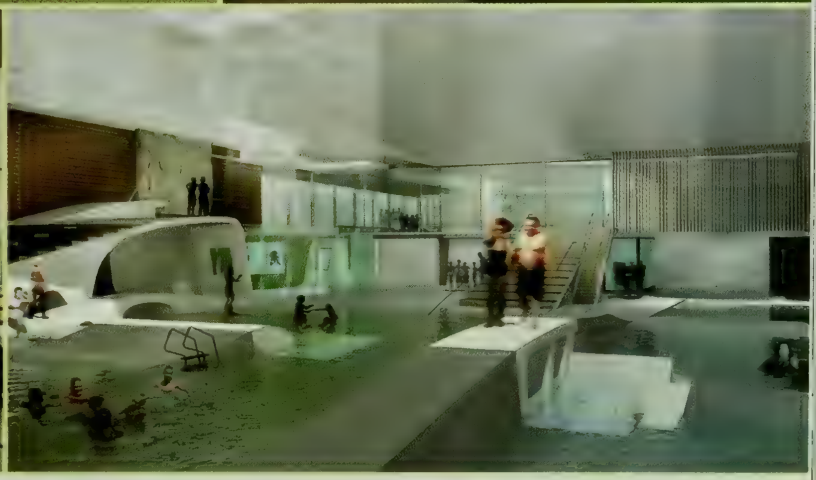
Aqua Center, Aalborg, Denmark

In this competition entry, the architects used a series of concrete ribbons to form pools, beaches, islands, bridges, and diving platforms. The forms bend and stretch to relate to the proportions of the human body. The proposal is currently on view in the exhibition *Liquid Stone: New Architecture In Concrete* at the National Building Museum, in Washington, D.C., through April 2005.





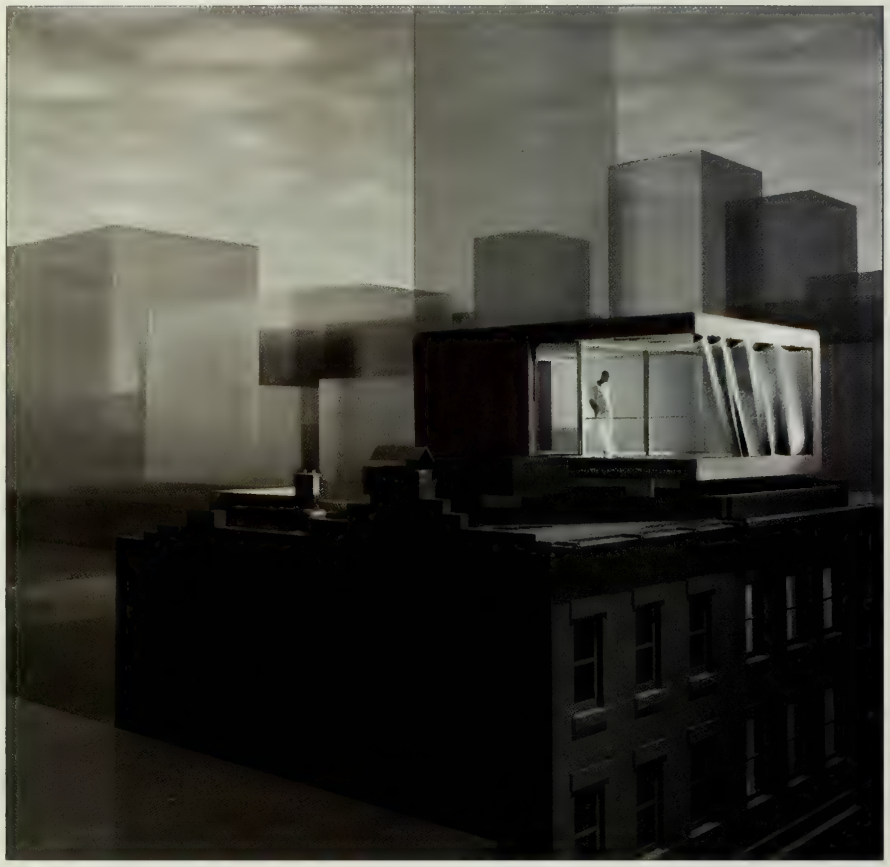


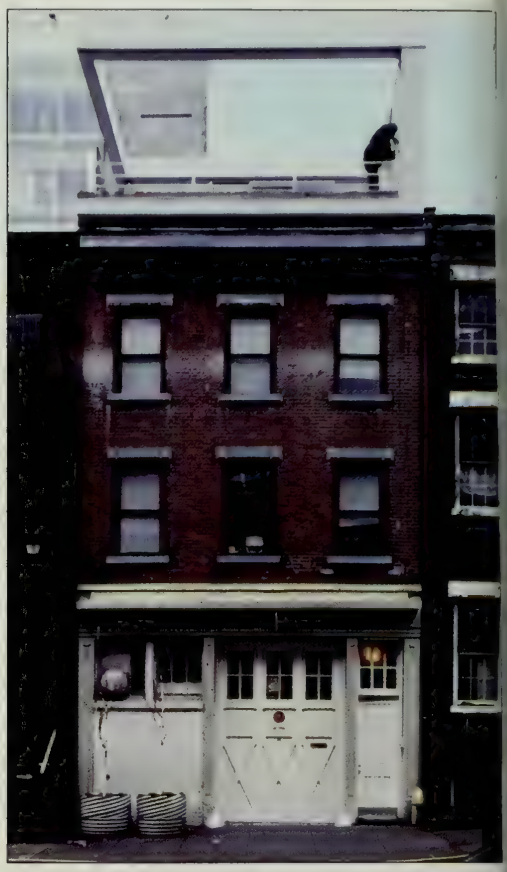


World Trade Center Memorial, New York City

The firm's World Trade Center Memorial competition entry engaged the entire city at a public policy level. The architects wished to "use the opportunity to radically change the economic, emotional, and physical texture of the city," said Martin Finio. One element of the proposal involved the use of wind turbines, "equating memory with a visible sustaining source of energy."







Photographer's Penthouse, New York City

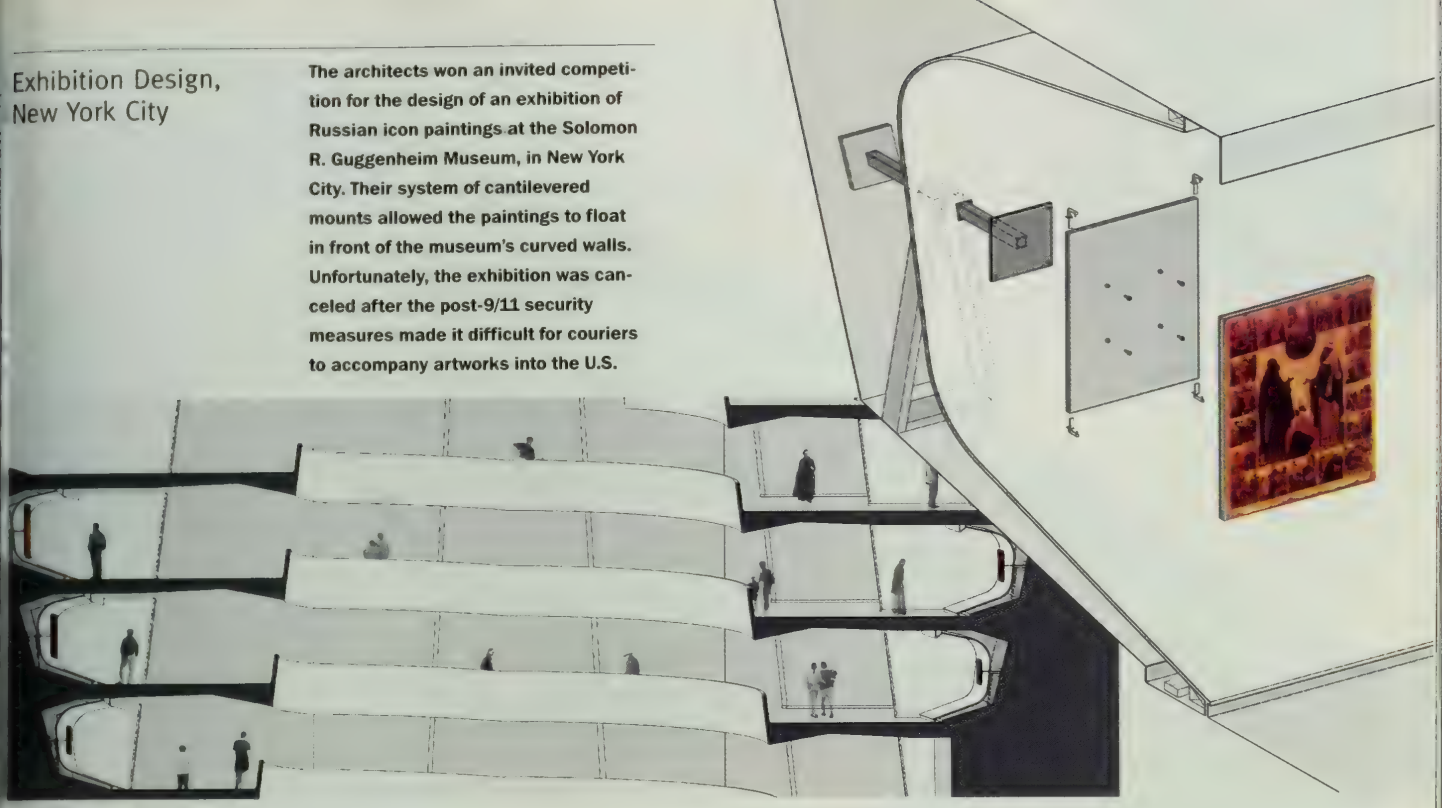
When the owner of this West Village town house found that a portion of his Hudson River view would soon be blocked, he commissioned a rooftop pavilion that would allow him a new view over adjacent buildings. The as-yet unrealized project is a combination of indoor and outdoor space. Motorized screens are incorporated into the structure to allow privacy indoors and out.

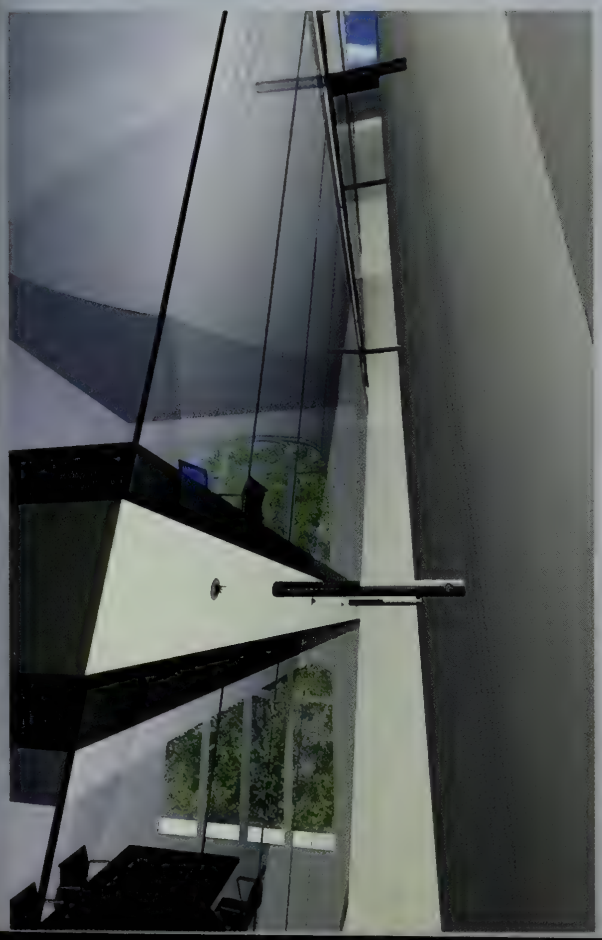


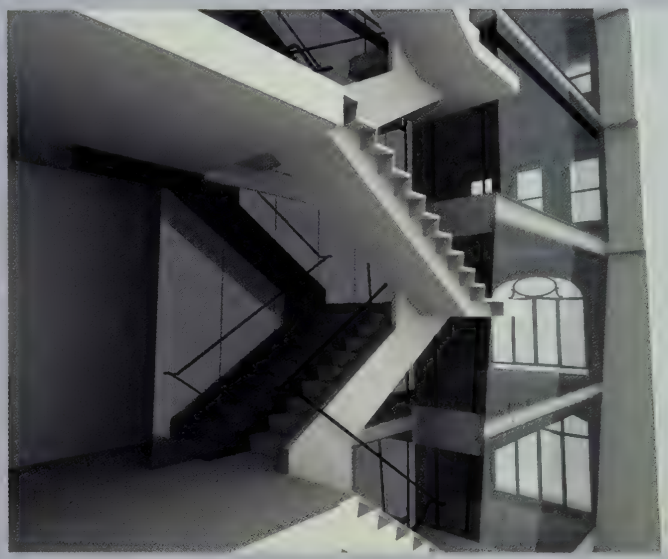


Exhibition Design, New York City

The architects won an invited competition for the design of an exhibition of Russian icon paintings at the Solomon R. Guggenheim Museum, in New York City. Their system of cantilevered mounts allowed the paintings to float in front of the museum's curved walls. Unfortunately, the exhibition was canceled after the post-9/11 security measures made it difficult for couriers to accompany artworks into the U.S.







Heckscher Foundation, New York City

The architects are converting a 1900s town house that architect Samuel Trowbridge built for himself into offices for a philanthropic organization. While the building's footprint barred the designers from making complex interventions, they successfully sliced a five-story atrium into the space adjacent to the building's stair by creating a clever structure from which floors were hung.



Marcelo Spina and his firm Patterns shake things up by fusing materials and program

By Michael Speaks

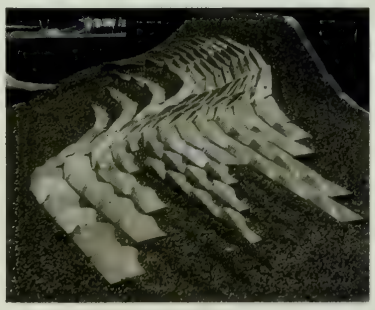
Architect: Patterns
Location: Los Angeles
Founded: 1999
Design staff: 4
Principal: Marcelo Spina
Education: Columbia University, M.S., Advanced Architectural Design, 1997; National University of Rosario, Argentina, B.Arch., 1994
Work history: Reiser + Umemoto 1997–98; Keller Easterling Architects, 1997; Gerardo Caballero Architects, 1993–94
Key completed projects: Jujuy 2056 Apartment Building, Rosario, Argentina, 2003; *Snake-Rice*, Icheon, Korea, 2003; *Land.Tiles*, M&A, Los Angeles, 2003
Key current projects: SCI_Arc Café and Boardroom, Los Angeles, 2005; FYF Residence, Rosario, 2005
Web site: www.p-a-t-t-e-r-n-s.net

In a recent conversation in his downtown Los Angeles studi Marcelo Spina, the head of Patterns, a design research architectu practice in Los Angeles, distinguished his work from the blobl form-making that emerged in the 1990s. "I am not interested in makir formal experiments or cultural statements," says Spina. Instead, he has special interest in the practical implications of prototyping materials ar ideas and fusing them to create unexpected formal and programmat combinations. He calls this process "patterning."

Spina, who studied at the School of Architecture, Planning, ar Design in Rosario, Argentina, before obtaining a master's in advance architectural design at Columbia University in New York City in 1997, h applied patterning to his built projects. In the Jujuy 2056 Apartments i Rosario, Argentina, completed in 2003, Spina used an exterior concret ribbon to pattern the facade. With the small-scale *Land.Tiles* installatio in Los Angeles for M&A (Materials and Applications), a gallery an research center, he deployed 144 concrete tiles to create a micro-ecologi cal irrigation control system, designed to change according t environmental conditions. As both these projects suggest, Spina i engaged in experimentation and research as an interactive performanc where the results of testing materials feed directly back into the desig process itself. "In *Land.Tiles*, I wanted to make the design a form o research and experiment, but I wanted to do this with a material—concrete—which is very familiar in Argentina, and which I used i previous projects," Spina explains. "Concrete is, of course, also a materia not often associated with the kind of digital design tools tha many in my generation are now using."

Indeed, employing digital design and fabricatio techniques such as computer-numerically-controlled milling i the design of *Land.Tiles*, Spina was able to test each concret block by rapid prototyping, reconfiguring the blocks and thu the entire installation according to predetermined performanc criteria. This kind of interactive, material prototyping blurs th distinction between abstract ideas and material form that ha long plagued discussions about architectural experimentation By testing and refining formal and programmatic systems which are woven together, each project becomes an iteration o the patterned approach that defines the office's work.

Spina often structures small-scale projects, such as a prototype for a bus shelter, as repetitions of previous or con-temporaneous projects. He considers this acquired design intelligence a means for developing new techniques and mate-rial research. His approach underlies the winning competition entry for the SCI_Arc Café; here, he patterns uses—library and café—with furniture and shelving components for an elegant solution that can be constructed cheaply and quickly. In turn, the patterning developed in the café project has informed recent projects, such as the FYF Residence, soon to be built in Rosario, Argentina, and the futuristic Busan Tower competition entry in Korea.



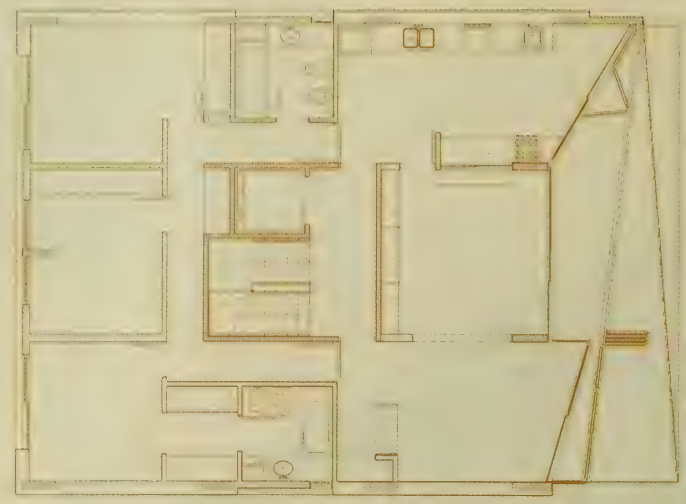


Spina explores materials and form in *Land.Tiles* (top) and *Snake-Rice* (above).

Monocoque House, 2003

An aluminum monocoque structure—comprising a single shell and skin fabricated by a molding process and used in automobile technology (left and bottom)—can be assembled on various sites, such as a slope with Eucalyptus trees (below). The aluminum-skin roof features gill-like apertures folded inward to admit light and air into bedrooms and living areas.





Jujuy 2056 Apartment Building, Rosario, Argentina

For a 12-story-high, 18-unit apartment building (right), Spina devised a poured-concrete system where slabs and end walls follow a bent ribbon pattern. The structure is enclosed by brick infill walls and a partially angled glazing system. Cantilevered concrete balconies form a canopy for the lobby (bottom right) and recede at top (below, and ninth-floor plan, above) in deference to zoning.



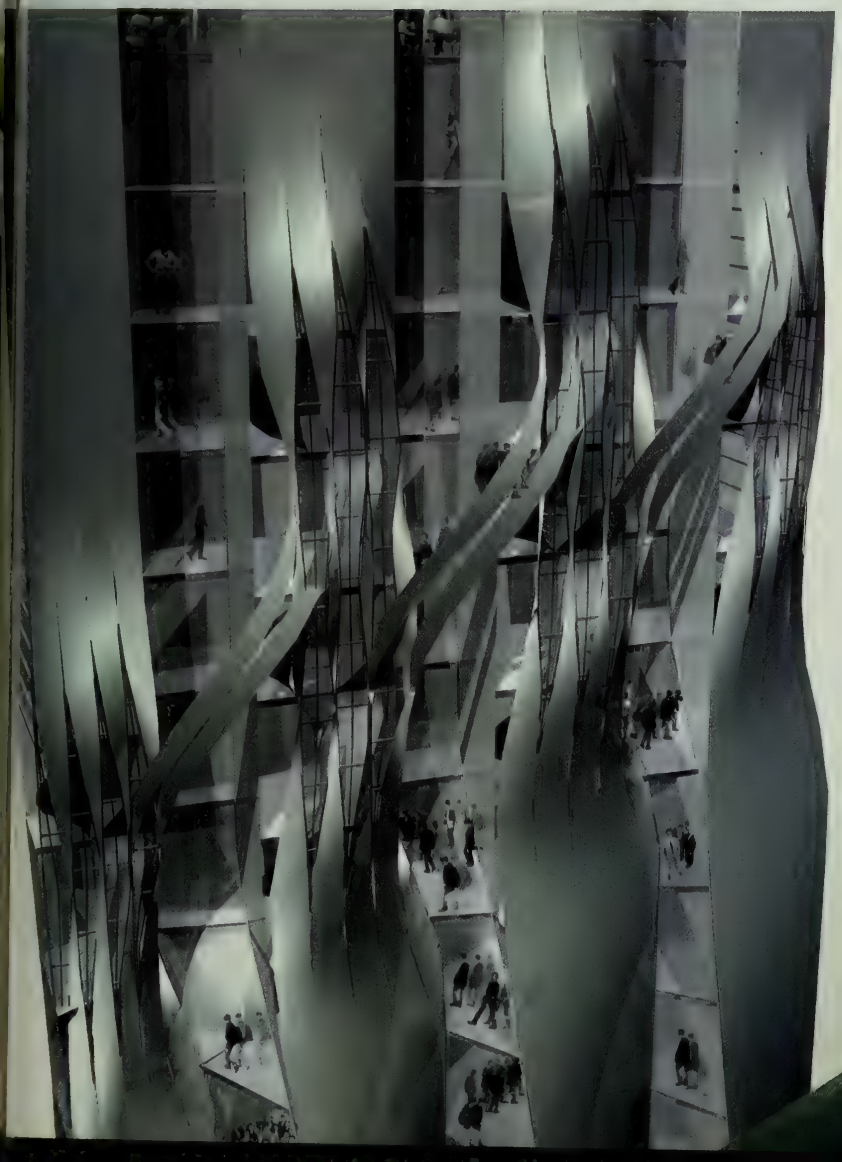






New Busan Observation Tower, Busan, Korea

The aerodynamically inspired shaft of the tower (above) includes a lower portion for community facilities (below), a middle one for business activities, and an observatory at the top. The attenuated form is held together by cantilevered floor plates, spiraling stairs (right), structural ribs, tendons bonded together and to the slabs, plus hydraulic jacks anchored to the ground.

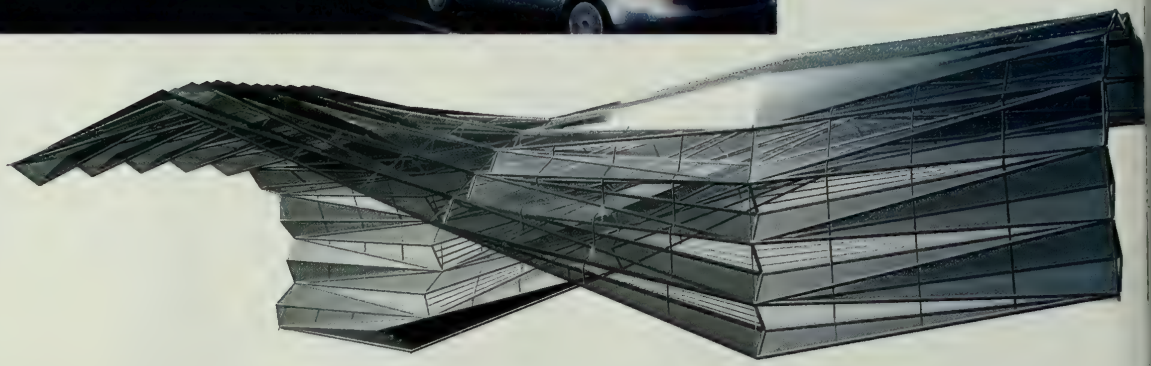




Bus Shelter Prototype

A folded and triangulated steel structu provides seating while waiting for a bu and affords views out to the landscap (left). Custom laser-cut metal louvers clad the triangulated tube structure, which is supplemented with a second- ary structural system of lateral tensio members, a tertiary structure of metal members, along with an external skin continuous plastic and an internal skin of faceted plastic (below).

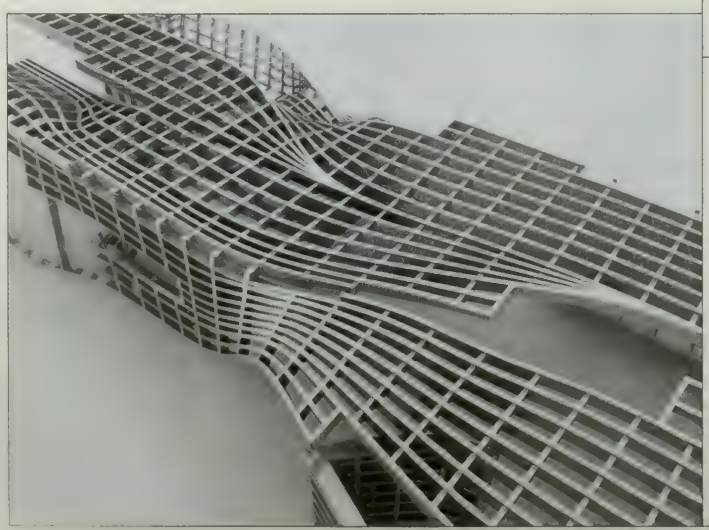




FYF Residence, Rosario, Argentina

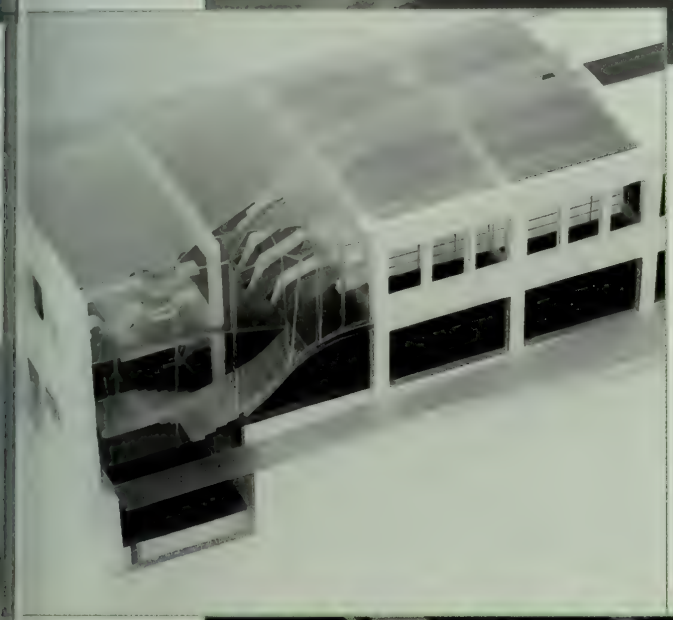
A basic box (right) is deformed according to topographical features of the site for a house to be built on the outskirts of Rosario, Argentina. The 1,507-square-foot concrete-shell structure folds and bends to provide a greenhouse, solarium, and swimming pool (right two) for an agricultural engineer and landscape designer. The lattice (below) illustrates the flowing geometry.











New SCI_Arc Café and Boardroom, Los Angeles

Patterns won a competition to design these spaces in the existing SCI_Arc building, a long linear concrete former depot near downtown L.A. (left). On the second floor, Spina hopes to bring the café and library together through new aluminum library shelves that are sloped and inflected toward the café space. The café tables (above), which are aluminum single-shell structures, seem extruded from the shelves. The boardroom (below), slightly above grade, is given views to the outdoors through a new faceted-glass wall.





dECOi releases the potential energy of digital technologies in the architectural realm

By Sarah Amelar

Architect: dECOi
Location: Cambridge, Mass., and Paris, France
Design staff: 3 to 4, typically
Principal: Mark Goulthorpe
Education: University of Liverpool, B.Arch., 1987; University of Liverpool, B.A., 1984
Work history: Richard Meier & Partners, 1988–91
Key completed projects: Glaphyros Apartment, Paris, 2003; Blue Gallery, London, 2001; *Aegis Hyposurface*, Hanover, Germany, 2000; *Ether/I*, Geneva, Switzerland, 1995; *In the Shadow of Ledoux*, Grenoble, France, 1993
Key current projects: Miran Galerie, Paris and Beijing, 2004; Excideuil Folie, France, 2005; St. Andrew's Loft, 2005–2006; *Aegis Hyposurface*, MIT, Cambridge, Mass., 2005–2006
Web site: www.newitalianblood.com/category/open/519.html

Although dECOi's written descriptions of its work have the ring meticulous scientific abstracts, the projects often convey an e gant and expressive dynamism through still forms. With, say metal sculpture resembling windblown fabric or a penthouse akin t spiraling crystal formation, dECOi's poetic aesthetics are inseparab from the digitally based research and processes that generate them.

But when Mark Goulthorpe founded dECOi in 1991, the potent of digital technologies was just emerging. As this British-born (and ur recently Paris-based) architect joined forces to work on projects and co petitions with collaborators as far-flung as London and Kuala Lumpu digital networking became an essential tool. Rather than view technologi change as a mere advance in technique, he envisioned the new digital rea as a means to "a philosophical and cognitive shift … entirely requalifying t way architecture is thought about, practiced, formally created, and buil

Grandiose as such ambitions may sound, dECOi's projects typ cally integrate innovation from concept through fabrication, albeit on small scale, engaging the computer to cross-pollinate between architects a experts from such disciplines as mathematics. (Goulthorpe, currently associate professor at MIT, can now pursue his complex interests at both t architecture school and Media Lab.) dECOi's cross-disciplinary trajecto emerged early on, as in *Ether/I*, which translates the trace of two dancers- the ghostlike vestiges of movement, invisible to the naked eye but record on video—into twisting aluminum mesh. An evocatively undulant sculp ture, it creates intentional ambiguity between image and surface and objec

Again striving "to trap movement in 3D form," the firm mo recently designed Bankside Paramorph, a London towertop apartme extension. The term *paramorph* literally describes a crystal whose for varies without change to its chemical composition. Here, the word refers a faceted, spiral, crystalline configuration, and also to the parametric mod eling—based on relational geometry's alterable parameters—that permi quick and economical analysis of formal variations, factoring in energy eff ciency, ease in fabrication and assembly, optimal views out, costs, and so o

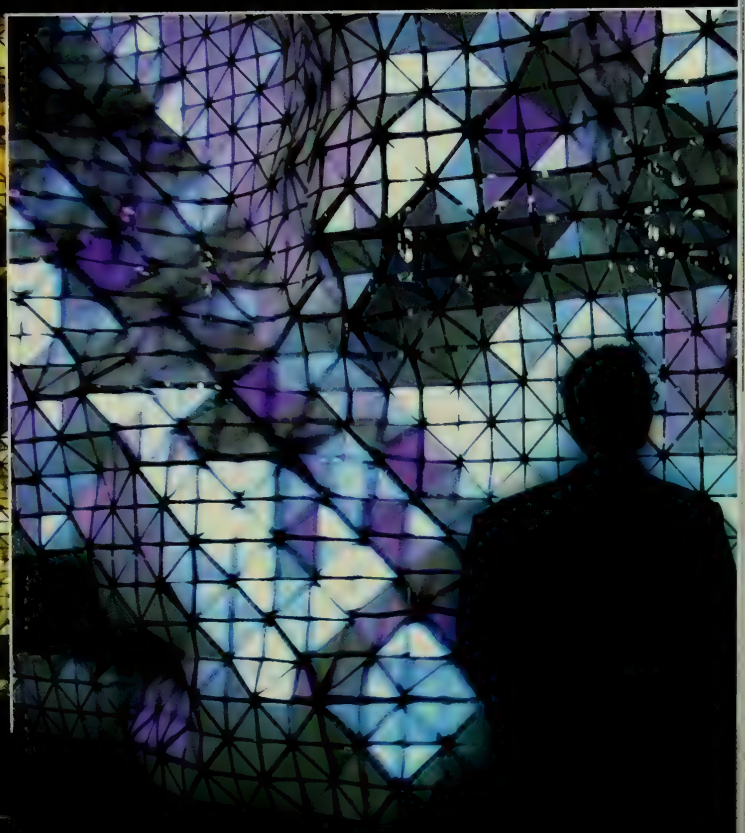
Paramorph also challenges the existing logic of architectur fabrication, which treats structure, skin, and insulation as separate entitie and must then orchestrate various contractors and suppliers. Eliminatin skeletal frames and intermediary formwork, Paramorph's multifunctiona honeycomb panels—precision-cut and drilled with dowel-fit holes—pe form as finished surface, insulation, and structure, ready for quic assembly by a sole contractor. In "collapsing multiplicity into singularity dECOi rejects the idea of designing an object and then applying computer numerically-controlled (CNC) methods to its fabrication, instea integrating the range of technological implications from the start.

Other dECOi explorations include *Aegis Hyposurface*, a dynami interactively reconfigurable 3D screen that reacts to motion and sound, pr saging fully kinetic and environmentally responsive architectural surface

The realization of these projects remains "time consuming admits Goulthorpe, "but it's getting quicker, and will undercut standardiza tion. Highly complex forms, efficiently and economically produced, with th potential for infinite variance—that's the revolution of digital technology."

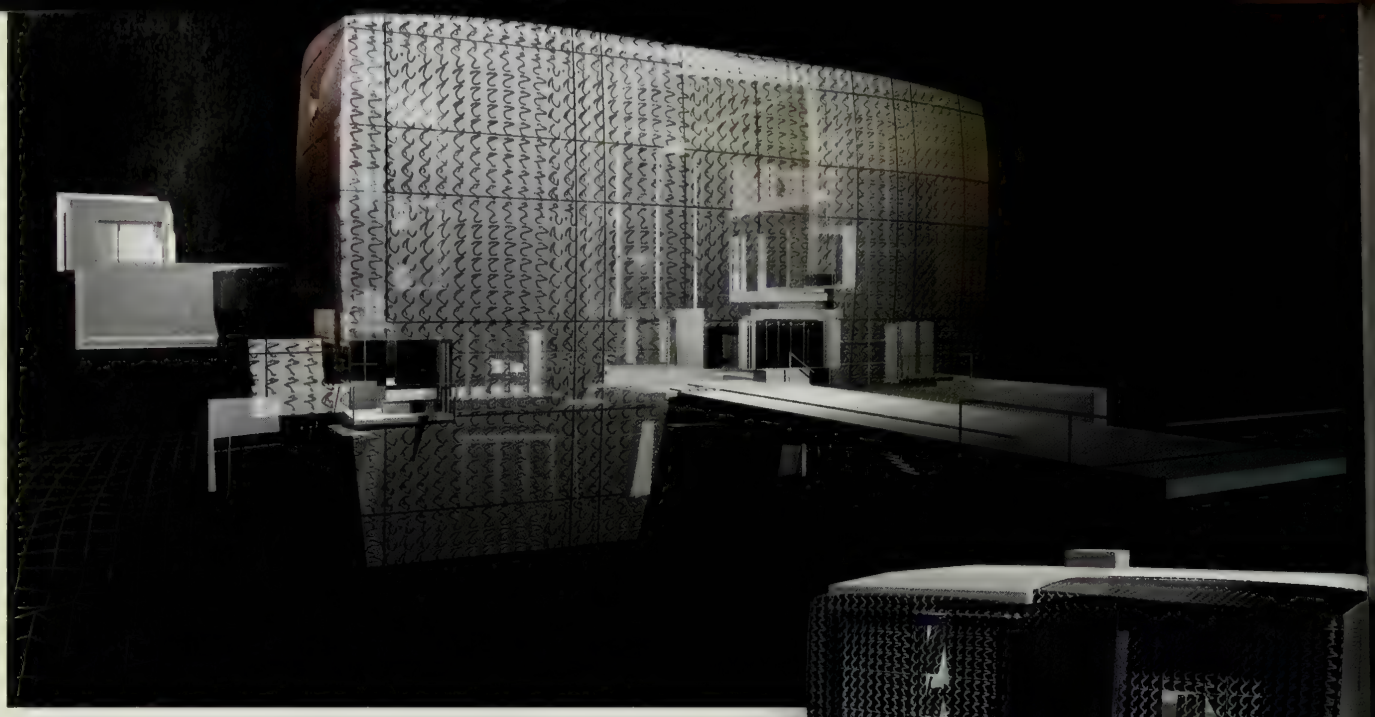






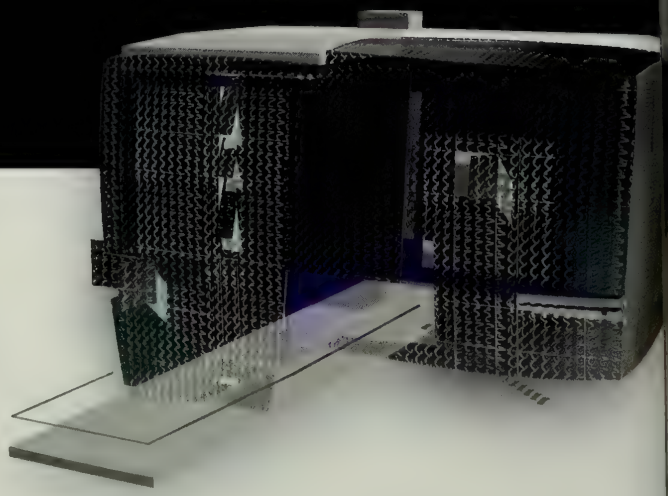
Aegis Hyposurface, Hanover, Germany

This interactive, dynamically reconfigurable 3D screen reacts in real time to surrounding motion and sound, transforming *Hyposurface*'s complex topography and colors. This project, which dECOi continues to research at MIT's Media Lab, presages fully kinetic and environmentally responsive architectural surfaces, sensitized to changes in, for example, climate or security needs.



Pallas House,
Kuala Lumpur,
Malaysia

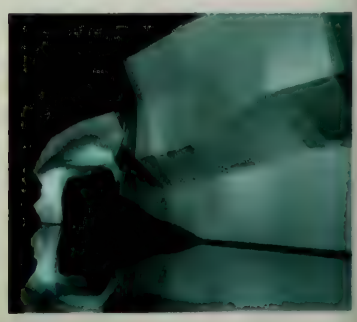
Sited on steep jungle terrain in Malaysia, the single-family Pallas House proposes a curiously monolithic form wrapped in a breathable skin, following the tropical precedent of layered filters protecting against solar gain and rainfall. The exterior cast-aluminum panels bear a mathematically generated pattern of perforations, poised on the cusp between an industrial and postindustrial aesthetic.



Ether/I,
Geneva, Switzerland

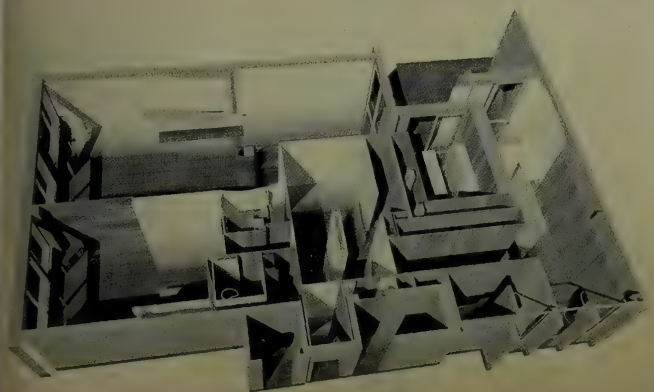
Marking the 50th anniversary of the U.N., *Ether/I* translates the trace of two dancers—ghostlike vestiges of movement, invisible to the naked eye but recorded on video—into twisting aluminum mesh. Goulthorpe has described this 67-plus-foot-long sculpture—intentionally ambiguous in image, surface, and object—as "a threshold, an energetic phase ... [near] the point of liquefaction."



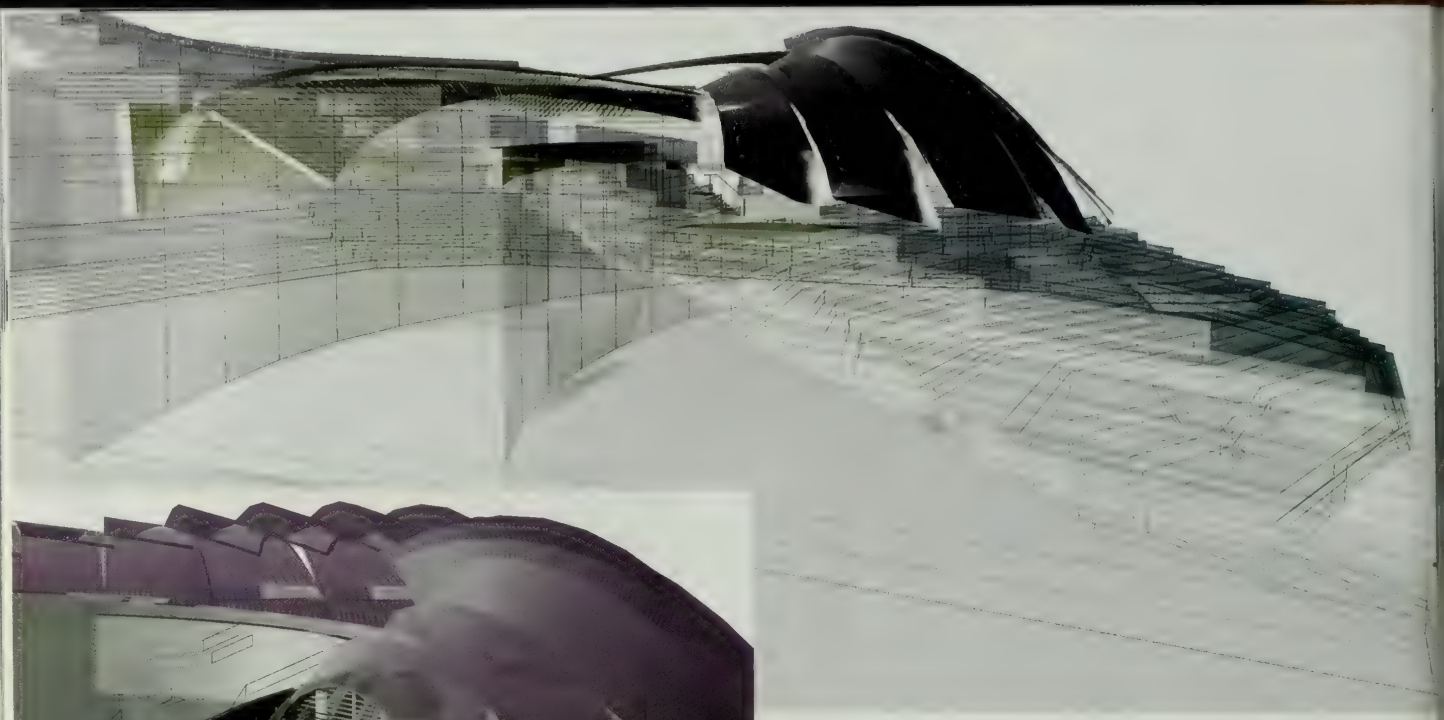


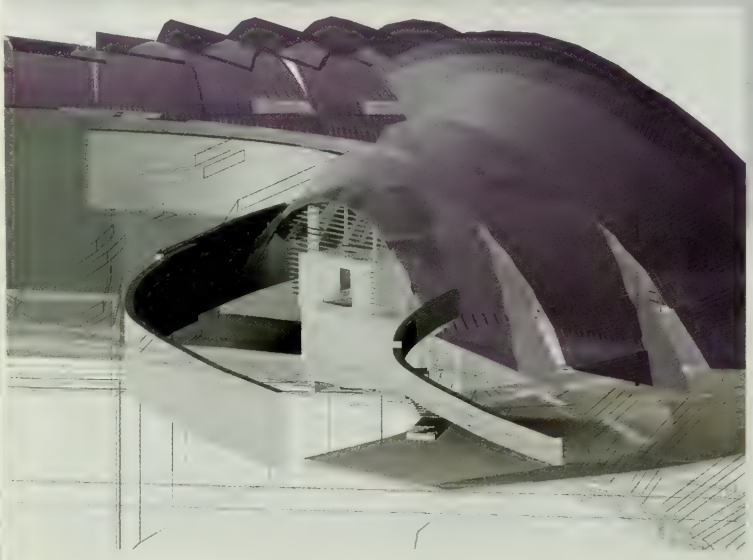
Glaphyros Apartment, Paris

In this residential project, every component—including metal door handles, space-dividing screens, and wash basins—represents a unique experiment in mathematically generated digital production. Even while producing such highly customized elements, rich in complex curves, dECOi manages to keep the fabrication reasonably inexpensive by strategically applying technologies.







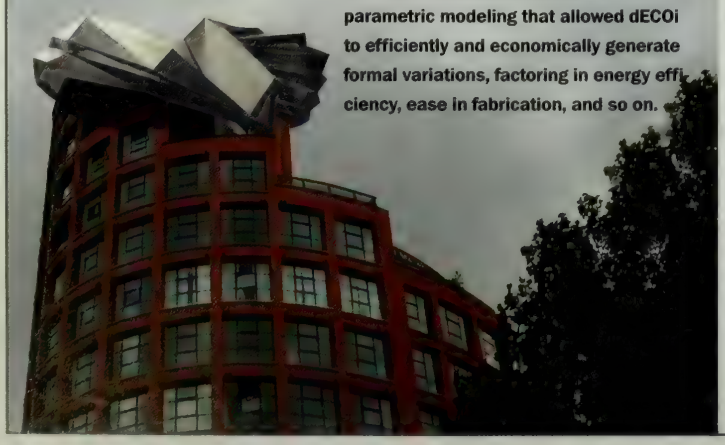


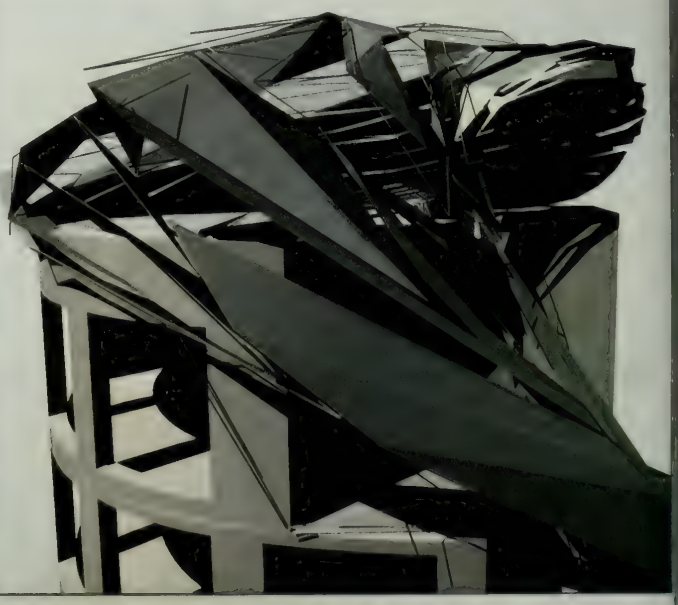
ECO Taal Ecological Center, Philippines

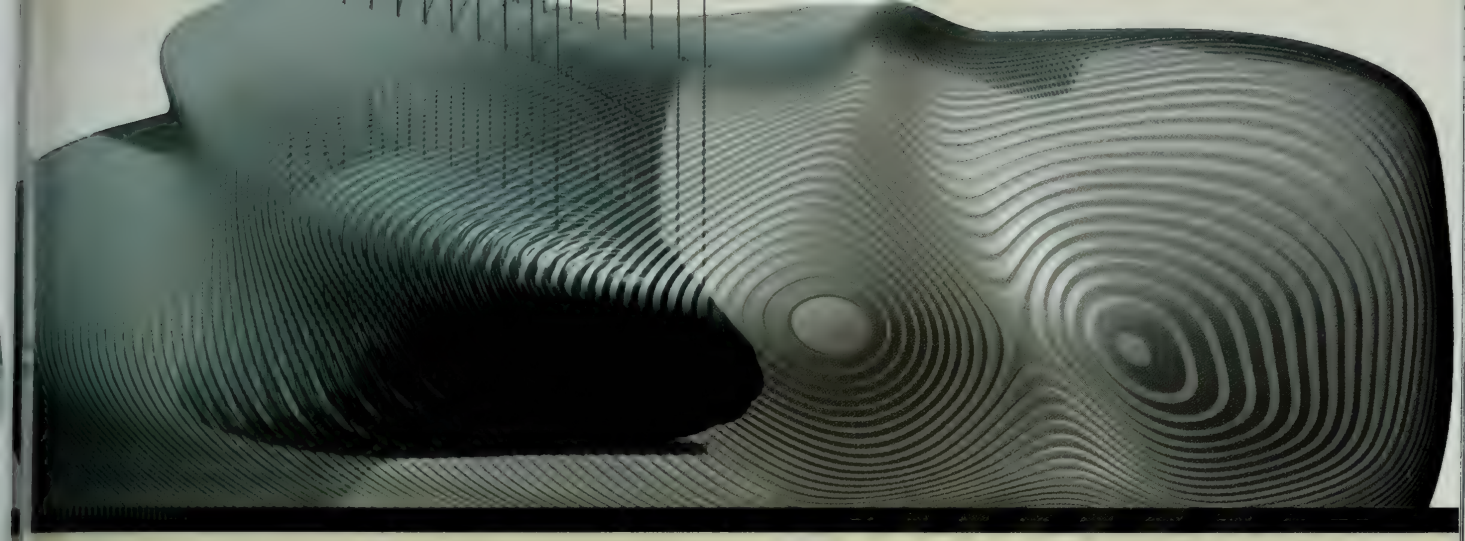
For the key elements of a complex intended for the Taal Volcano crater, dECOi gave ECO Taal a form designed to disappear into the land while simultaneously leaving a strong, clear visual impression. In response to a deeply wooded site, the architects conceived a structure with a carapacelike shell, swelling from the earth. Integral to the terrain, this shelter's jointed slats bend and turn with site contours.

Bankside Paramorph, London

Paramorph **literally describes a crystal whose form varies without change to its chemical composition. Here, the word refers to a faceted, spiral, crystalline penthouse extension, and also to the parametric modeling that allowed dECOi to efficiently and economically generate formal variations, factoring in energy efficiency, ease in fabrication, and so on.**

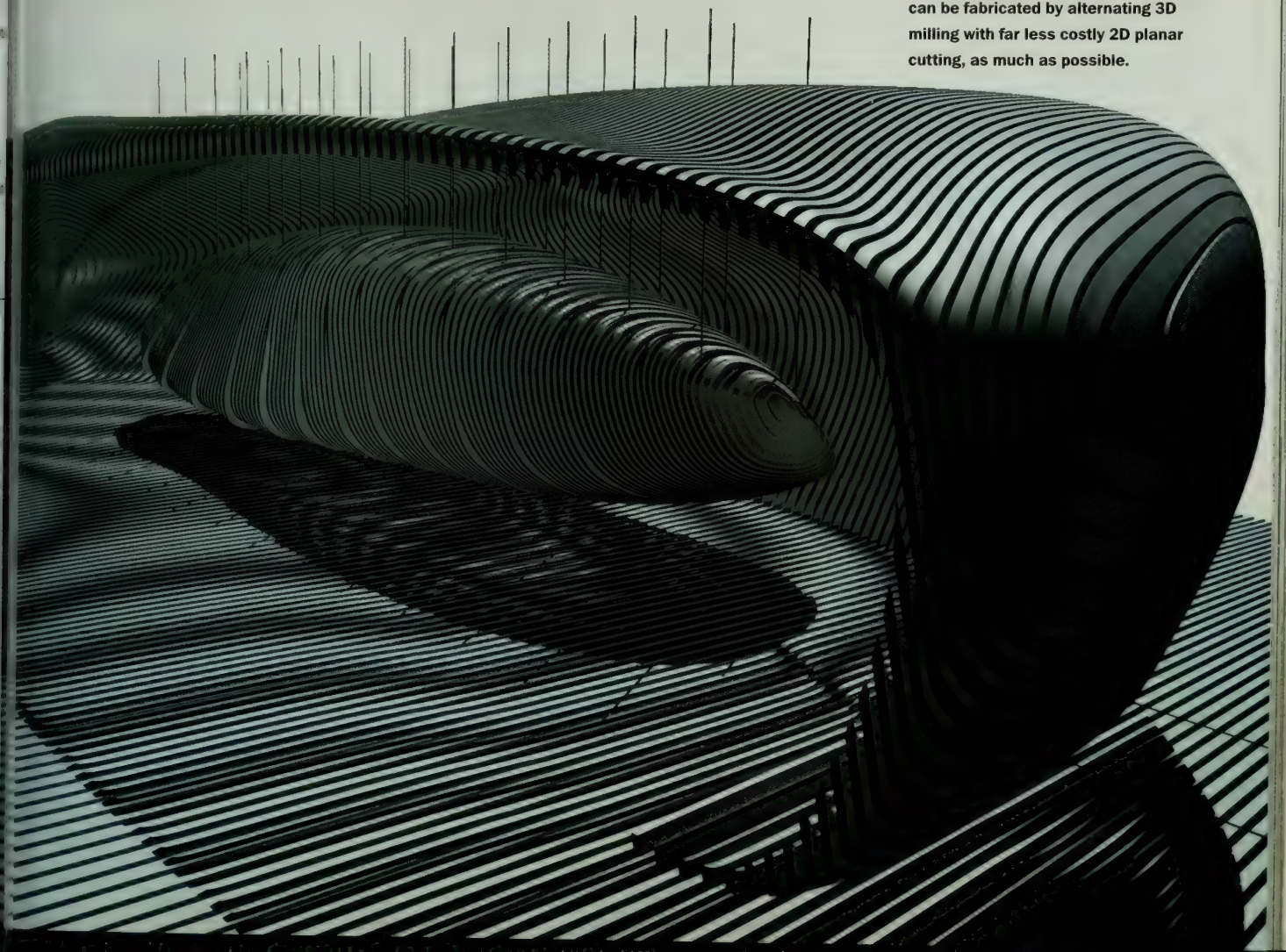


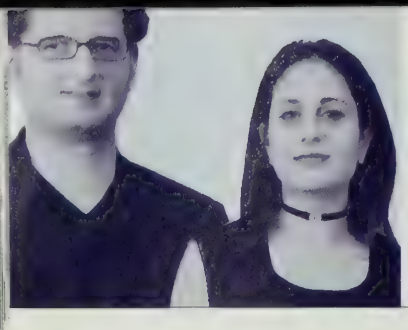




Miran Galerie, Paris and Beijing

This fashion press showroom, with a suspended display system, offers an interior inserted within a larger space. Here, dECOi overcomes the prohibitive costs of 3D CNC-machine routing by using plywood as the primary material and intelligently devising a design that can be fabricated by alternating 3D milling with far less costly 2D planar cutting, as much as possible.





Contemporary Architecture Practice pushes technology and unfolds a seamless realm

By Sam Lubell

Architect: Ali Rahim and Hina Jamelle / Contemporary Architecture Practice
Location: New York City
Founded: 1999
Design Staff: 6
Principals: Ali Rahim and Hina Jamelle
Education: Rahim: Columbia University, M.Arch., 1996; University of Michigan, B.S., 1987; Jamelle: University of Michigan, M.Arch., 1997; Denison University, B.A., 1993
Work history: Rahim: Practice—Payette Associates, 1987–93; Academic—University of Pennsylvania, 1998–present; University of Michigan, 1996–98; Jamelle: Practice—Razorfish, 2000–2002; MGA Partners, Architects, 1998–2000; Academic—University of Pennsylvania, 1999
Key completed projects: Catalytic Furnishings, Multiuse Chaise, Sublime American Design, New York City, 2003; Olympic Leisure Center, Athens, Greece, 2003; Residence for a Fashion Designer, London, 2002; Residential/Recording Loft, New York City, 2000
Key current projects: Light Fixture Series, Ivalo Lighting, 2005; Reebok Flagship Store, Shanghai, China, 2005; Residential Housing Tower, Dubai, U.A.E., 2007
Web site: www.c-a-p.net

At the Soho studio of Contemporary Architecture Practice (CAP) partner Ali Rahim notes that his firm strives for a "seamless investigation of the potential of digital media." Seamless indeed. Computers here seem to be hardwired into designers' brains. "We're actually holograms," jokes Rahim. Not quite, but the company uses digital technology every step of the way, from design research to exploration of use scenarios to fabrication. The process produces dynamic forms and projects that are shaped equally by software and human intervention.

CAP is now designing a Reebok flagship store in Shanghai whose sleek, curvilinear contours evoke the aerodynamics of futuristic cars and airplanes. For its design studies, the team utilized 3D modeling programs, such as Alias Studio, Maya, and Rhino (used by the automobile and movie industries), to develop thousands of virtual models whose forms evolved on-screen over time. "You shape it over and over again until you develop the right sensibility," says Rahim. The final result is a store that curves and unfolds seemlessly into overlapping zones as visitors move through it. By varying the lighting and using composite materials (mostly fiberglass) of different opacities, the firm differentiates the character of each zone and adjusts its "intensity." Each space, meanwhile, accommodates a variety of uses. For instance, stairs can double as display shelves or seating areas.

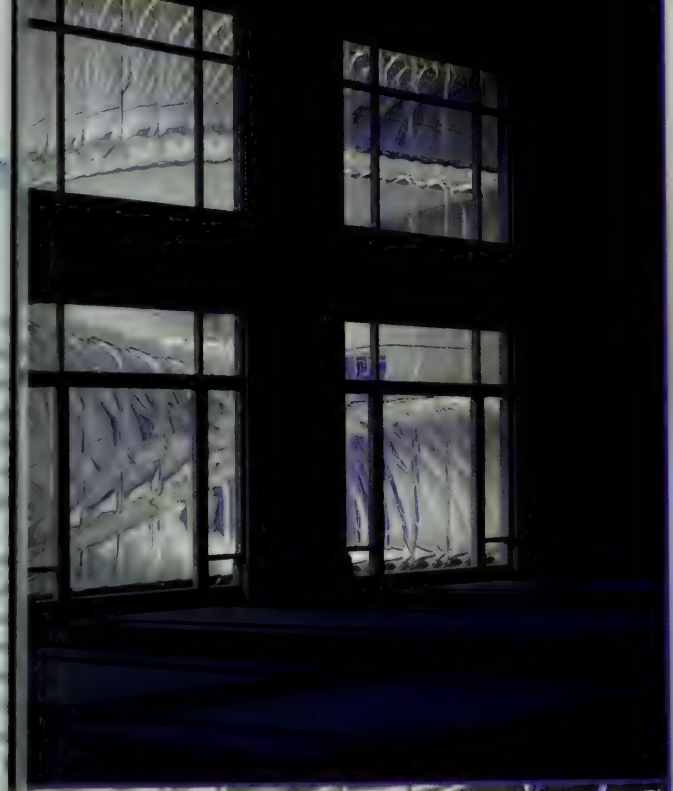
The team makes such diversity of uses a defining characteristic of its work. Its Multiuse Chaise, for instance, curves in several directions to accommodate many ways of reclining. "We want people to find uses that we haven't even anticipated," says Rahim. "Who says a couch has to be used only as a couch?" To produce the chair, the firm worked with a manufacturing company to utilize a "variable mold system" that employed a digitally controlled robotic arm to shape the forms.

Rahim, who grew up in the U.K., started CAP in 1999 and joined forces in 2002 with Hina Jamelle, an architect who had been a marketing specialist at Razorfish, a firm that designs Web sites and other Web-based systems. In addition to designing, she shapes the firm's marketing strategy, using phrases like the "seamlessness between brand strategy and spatial strategy." Rahim and Jamelle hope to apply such concepts as they progress from winning competitions to building projects. The firm has won five competitions—one for a "performative leisure center" for the 2004 Athens Olympics—but none has moved into construction. The team built a loft for a European pop star in New York, but the client's desire for privacy has prevented its publication.

One project close to moving forward is a residential tower in Dubai, which features curvaceous pods, each customized for the needs of the clients. The firm has also modeled a fashion designer's residence in England with rows of minute openings that create a dramatically illuminated hallway doubling as a catwalk for runway shows. Meanwhile, as CAP evolves, Rahim and Jamelle will continue to unlock the potential of the computer, exploring the rich spatial tensions created at the intersection of thought, technology, and form. ■



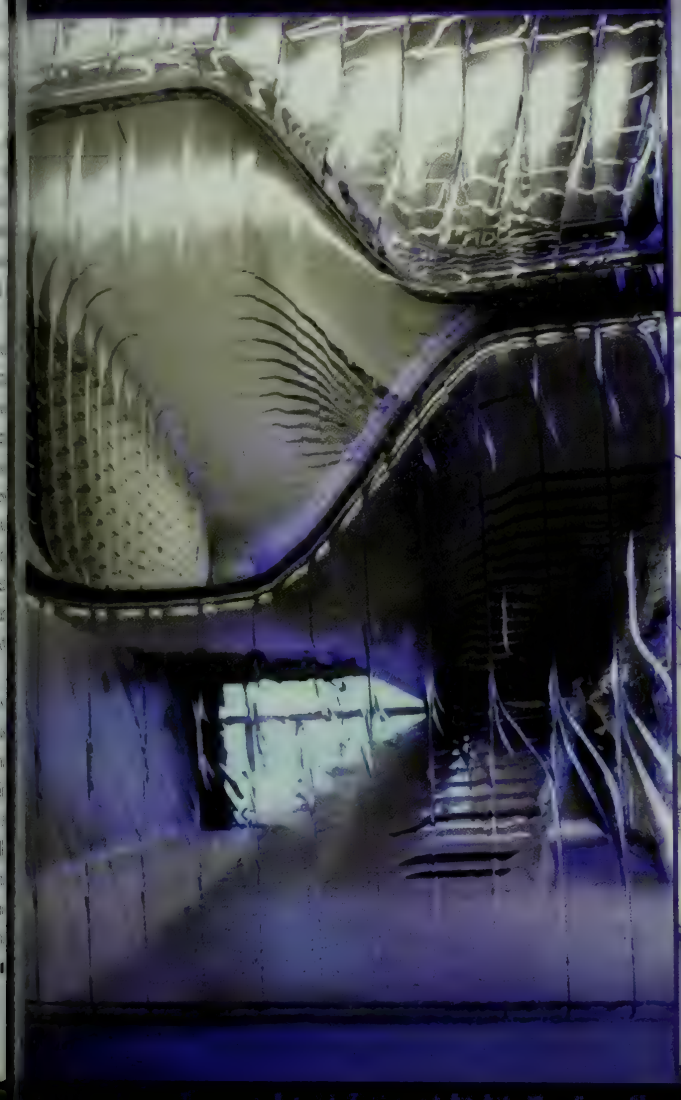
The firm's Multiuse Chaise accommodates several modes of reclining.

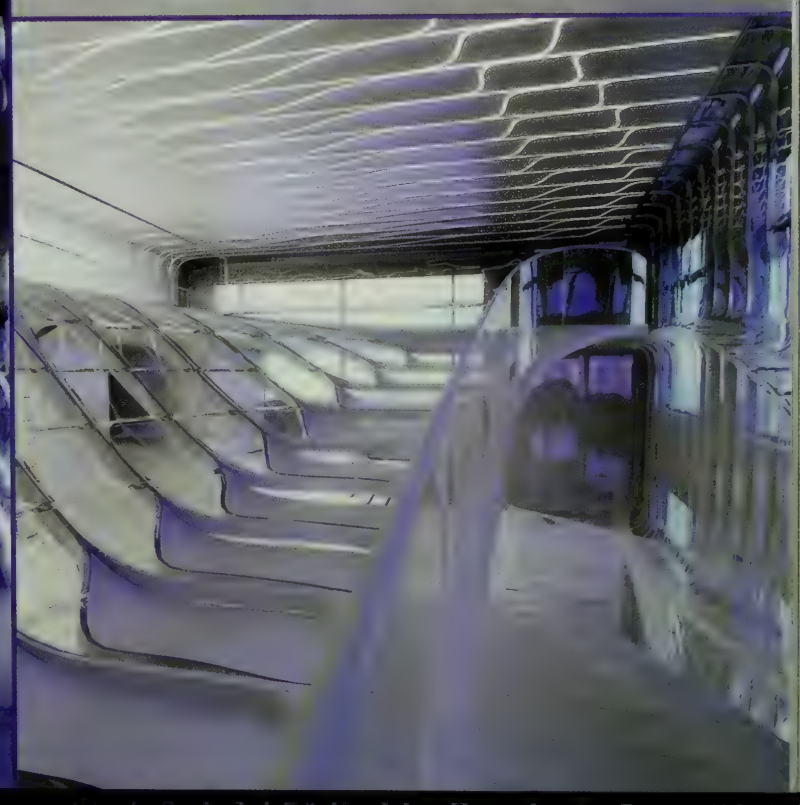




Reebok Flagship Store,
Shanghai, China

Located in the city's upscale Xin Tian Di district, the store's highly unusual form contrasts sharply with the conventional building that contains it. The clean, curvaceous aesthetic is punctuated by spaces that blend seamlessly into one another. Functions also overlap: Stairs, for example, can become display shelves or seating spaces.









Residential Housing Tower, Dubai, U.A.E.

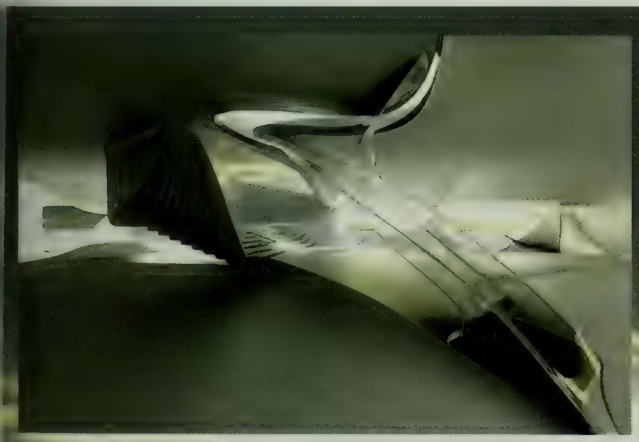
This proposed residential tower in Dubai, located on one of the city's busiest thoroughfares, features flexible units whose shapes are dictated mostly by the amount of space they require. Their forms, in turn, affect the layout of the entire floor. This variability results in a highly malleable design for the building as a whole.

Residence for a Fashion Designer, London

In keeping with its vision of dramatic spaces, the firm designed continuous rows of small exterior windows to create highly variable and intense lighting inside the house. Characteristically, function also varies: A hallway can become a catwalk, while stairs can serve as benches. Each room's layout has a considerable impact on the next, creating an unfolding sequence of spaces.



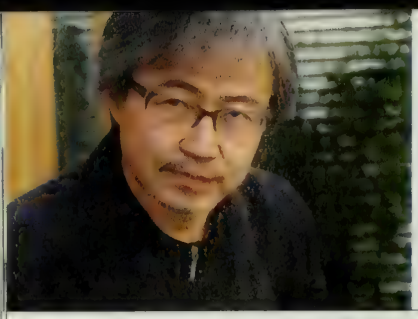




Olympic Leisure Center, Athens, Greece

The firm's penchant for multiuse forms was well suited to the design of this space, meant to encourage many types of leisure activity for athletes and spectators at the 2004 Athens Olympics. The mostly fiberglass structure's dynamic forms impressed competition jurors like Zaha Hadid and Hani Rashid. But Olympic security costs diverted funds, and the plan was canceled.





Byoungsoo Cho challenges norms in the way design and construction work together

By Clifford A. Pearson

Architect: Byoungsoo Cho Architects
Location: Seoul, Korea, and Bozeman, Montana
Founded: 1994
Design staff: 10
Principal: Byoungsoo Cho
Education: Harvard, M.Arch. and M.Arch., Urban Design, 1991; Montana State, B.Arch., 1986
Work history: Practice—Junglim Architects, 1992–94; Gruen Associates, 1991–92; Donham and Sweeney Architects, 1986–88; Academic—Montana State, 1999–present; Kyonggi University, 1996–present; Universität Kaiserslautern, 1995–96
Key completed projects: Camerata Music Studio and W. Residence, Paju, Korea, 2004; Sukokri Studio House, Yangpyoung, Korea, 2004; C-Shaped Metal Roof House, Bockpori, Korea, 2003; Village of Dancing Fish, Facility for Mentally Challenged, Paju, 2000
Key current projects: PaiChai University, College of Fine Arts and Architecture Building, Daejeon, Korea, 2005; Soemi Furniture Gallery and Café, Jai-dong, Korea, 2005; Ramp Building, Seoul, Korea, 2006; Wire Museum, Yang-San, Korea, 2006
Web site: None

Millions of years ago, Montana and Korea were next to each oth That's what one of my students told me that he saw in a geolo book," says Byoungsoo Cho, trying to explain his attraction to B Sky Country. Cho, who teaches architecture at Montana State Universi first felt Montana's pull in the 1980s when, inspired by the writings of Ma Twain, he set out on a road trip through the American West. He ended u studying architecture in Bozeman and returned 13 years later, after earni a master's degree at Harvard and setting up a practice in his native Seo Now he shuttles back and forth, teaching in Montana and running a fir with its main office in Seoul and a satellite in Bozeman.

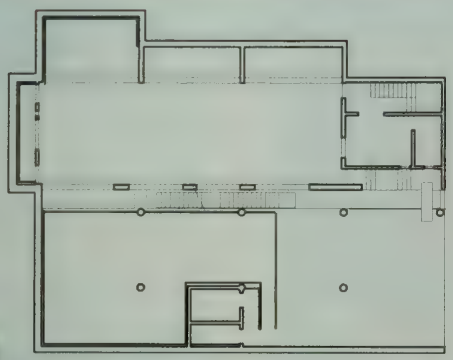
"I'm fascinated by the industrial, agricultural buildings Montana," states Cho. "In my work, I try to contrast the contemporary an the primitive. Sometimes I intentionally keep things rough, not refined For example, he shaped the Sukokri Studio House—overlooking rice fiel in Yangpyoung, Korea—as a simple square box, 46 feet by 46 feet, an carved out a 16-by-16-foot open courtyard in the center. "I designed th hole in the center as a moon-watching space. Keeping the primitive i mind puts mystery back in our lives and lets us experience subtle chang in nature," he explains. Cho also kept the house's details very simpl designing steel doors and windows without frames on the outside, so the appear industrial, and creating a frameless skylight in which 3-inch-thic laminated glass is set directly into concrete.

Growing up in Korea, Cho studied pottery before discoverin architecture. To this day, his work retains the imprint of the hand in it materiality and details. Most of the time, he builds as well as designs hi projects and has set up a construction arm within his firm. "The buildin process has become so specialized today, with each player having a differen role. I want a more organic, more open process," says Cho, who takes pleas ure in challenging the basic tenets of project-delivery management. Fo example, the day before construction was to begin on the Sukokri house, h threw away his original design and started from scratch—without delayin the building process. "I realized that a two-story structure made the site' hill seem too small. So I came up with a more primitive one-story square." Of course, being the client for this project gave him the freedom to mak such a last-minute change. Now he's talking about subverting the usua work process even further, hoping to construct three 10-foot-square con crete boxes and then invite three different architects to create works b cutting openings into the solid planes. "I call this 're-finding,'" says Cho "reversing the design-build process, so it's build, then design."

While this may sound like some high-art concept, Cho's archi tecture has a strong base in social responsibility. When he started his firm in Seoul in the early 1990s, most of his projects were houses for poor fam ilies. Using his students as free labor, he helped his clients build smal courtyard houses on narrow alleys. Now Cho is working on larger proj ects, including a commercial building in Nonhyun-dong, an architecture building at PaiChai University, and a museum for a wire manufacturer in Yang-San. When asked about his transcontinental life, he says, "I grew up in Korea but learned architecture in the U.S. So I'm like a chef who learned to cook in America but uses ingredients from Korea." ■







Camerata Music Studio and W. Residence, Paju, Korea

Designed for a television anchorman and his family in a suburb of Seoul, this residence includes a large studio for listening to the client's extensive collection of music. Cho tried to capture the feeling of a Montana barn with its tall interior space and limited fenestration. Daylight penetrates the building in dramatic fashion, adding a spiritual dimension to the experience of listening to music.





Village of Dancing Fish, Paju, Korea

Part of a complex for the mentally handicapped, this dormitory embraces its hillside site and forms an enclave for people who have little sense of direction. Cho broke the building into clusters of two or three rooms, which can be supervised by one person. A continuous metal roof floats over the plywood clusters, protecting them from the elements but allowing views through the building.





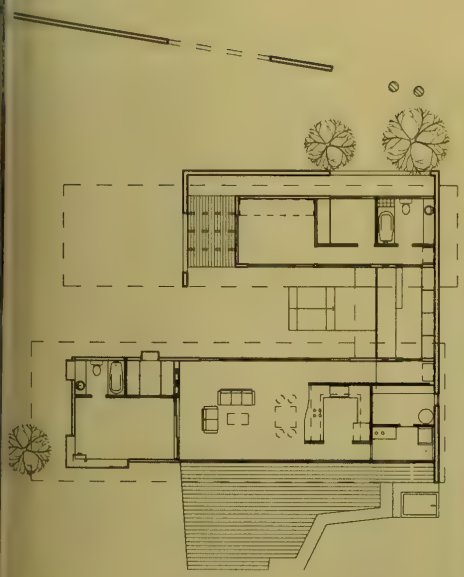






C-Shaped Metal Roof House, Bockpori, Korea

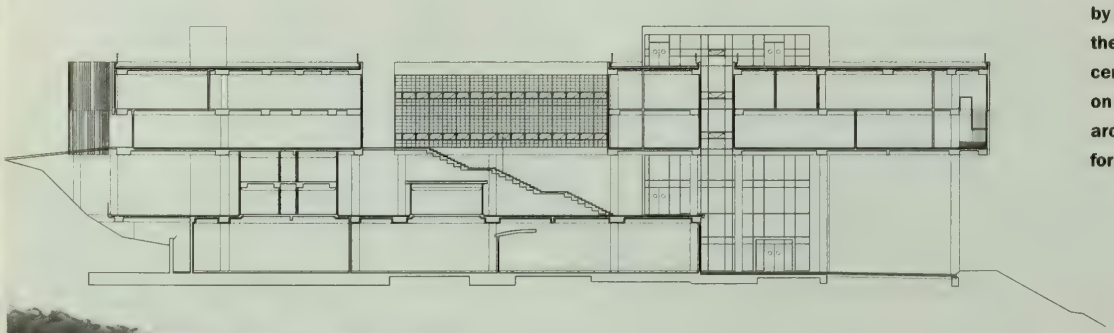
Years of agriculture and development had flattened the site of this house, so Cho decided to "heal" the property by adding a small hill and designing a simple house that hugs the earth. The flat roof expresses the beauty of the horizon, and the C-shaped plan forms a central courtyard that brings daylight inside. Concrete and timber work together to create a rough but sensual palette.





PaiChai University
College of Architecture,
Daejeon, Korea

To connect the college's three components—art, architecture, and music—Cho designed a dark corridor around the perimeter of the building penetrated by tall narrow windows. Classrooms, on the other hand, look onto a light-filled central courtyard. Lifting the building on columns above the hillside site, the architect created spaces underneath for outdoor learning.







Sukokri Studio House, Yangpyoung, Korea

Overlooking quiet rice fields, this house—designed by Cho for himself—provides a welcome retreat from the hectic pace of Seoul. Cho wanted the house to appear industrial on the outside but engage nature from within, so he used simple concrete for the exterior and carved out a "moon-viewing" courtyard in the center. He also kept details such as window frames very simple.



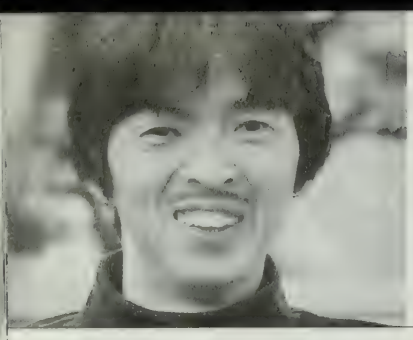


Ramp Building, Seoul, Korea

A dark, "cavelike" ramp winds its way up and through this mixed-use office building in a busy part of Seoul. A long, low window provides limited views of the city from the ramp, giving visitors a new perspective on the urban context. Cho wrapped the corner of the site with a "penetrable blanket" of wire mesh that contrasts with the heavy ramp. Below grade, a wine bar overlooks a waterfall.







Masaki Endoh's collaboration with his engineer creatively fuse architecture with structur

By Naomi R. Pollock, AIA

Architect: Masaki Endoh/EDH
Location: Tokyo, Japan
Founded: 1994
Design staff: 4
Principal: Masaki Endoh
Education: Tokyo University of Science, M.Arch., 1989, B.Arch., 1987
Work history: Practice—KAI-Workshop, 1989–94; Academic—Tokyo University of Science, 2000–present
Key completed projects: Natural Seam, Ichikawa, Chiba, Japan, 2004; Natural Strata, Kanagawa, Japan, 2003; Natural Wedge, Tokyo, 2003; Natural Ellipse, Tokyo, 2002; Natural Slats, Tokyo, 2002; Natural Illuminance, Tokyo, 2001; Natural Shelter, Tokyo, 1999; Natural Unit, Kanagawa, 1999; Hatudai Apartment, Tokyo, 1997
Key current projects: C-House, Tokyo, 2005; Y-House, Nagoya, Japan, 2005; Natural Seam 2, Ichikawa, Japan, 2006
Web site: www.edh-web.com

If he could, Masaki Endoh would wave a wand and make all columns and beams disappear. Collaborating with the engineer/architect Masahiro Ikeda, Endoh has been conjuring ways to minimize structural elements—whether by rendering them as thin as possible or by disguising them as wall panels and shifting loads to hidden roof trusses.

The pair already holds a patent on a structural system they devised for Natural Seam, a model house-turned-art-gallery on Tokyo's outskirts. Beneath a ceiling-embedded, 16-inch-deep steel truss, the architect was free to rearrange the 1.6-inch square structural columns within any 52-square-foot area. This flexible system adapts readily to most plan shapes, currently allowing Endoh to apply it to an 18-unit apartment complex with an irregular profile, generated by the surrounding natural landscape.

Though Endoh and Ikeda have separate firms, they maintain an ongoing dialogue about the fusion of architecture and structure, extending far beyond the standard designer-consultant relationship. It began when Endoh was working at KAI-Workshop, an architectural firm specializing in residential work, and Ikeda at the office of structural engineer Mutsuro Sasaki. When Endoh launched his solo practice with the creation of his own home, he sought Ikeda's input. The two agreed that they "didn't like columns," explains the engineer. So they put the vertical supports outside the exterior walls, yielding column-free quarters for Endoh and his family on the third floor, above column-free spaces for his office and his parents, as well as a ground-floor rental unit.

The duo went on to design Natural Unit, a home for an acoustical engineer and a concert pianist that blends living space with a music studio by creating a single large room inside a 4-inch-thick, concrete-hyperbolic-paraboloid shell. The dramatic shape, secured by a steel-plate deck with noise-absorbing panels, yields an echo-free and structurally sound interior.

Whereas Natural Unit stands out in suburbia, with plenty of open space setting off its unique geometry, Natural Ellipse fills a tiny site in the heart of Tokyo's Shibuya entertainment district. "Usually clients prefer suburban houses with gardens, but this owner likes shopping, restaurants, and playing in the city," says Endoh, grinning widely. On a site hemmed in by bars and love hotels, where rooms rent by the hour, windows weren't a real option, so Endoh created a toplit form: a duplex, clad in a rigid, fiber-reinforced plastic shell, puffed out like a giant white balloon.

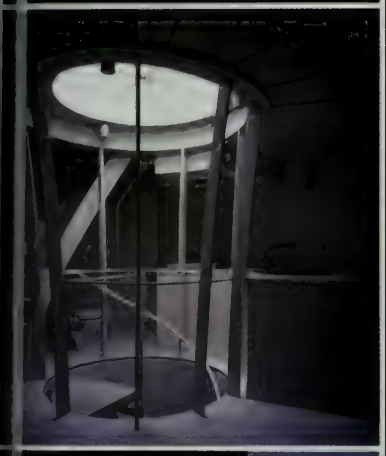
Taking advantage of the virtually windowless outer enclosure, the designers distributed structure at its perimeter. Though the unusual oblong shape looks complex, it is secured by just 24 elliptical steel rings carrying vertical and horizontal loads. The frame construction simply entailed standing laser-cut steel hoops on end and tying them together with horizontal bands.

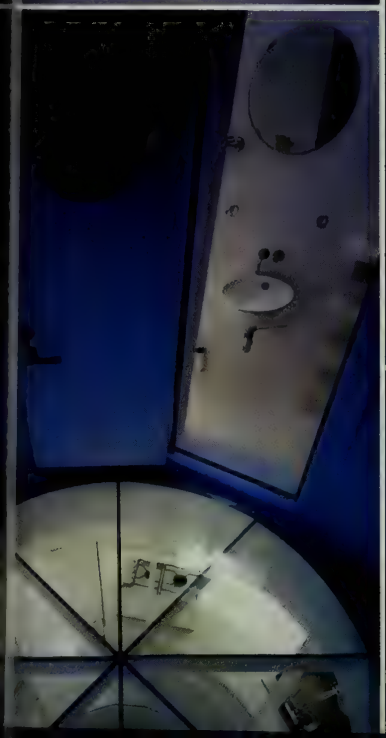
Currently, the twosome is working on C-House (left), a small structure supported by only two columns and a bold steel box, made of 0.6-inch-thick steel sheets. Both a load-bearing element and an enclosure of habitable space, the box deftly blends architecture and structure—epitomizing the Endoh-Ikeda collaboration. ■



The 850-square-foot C-House (above) will rise in a Tokyo commercial zone.



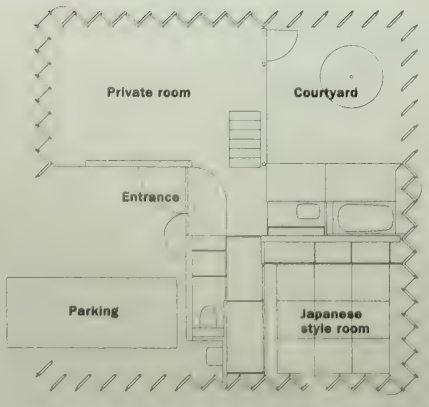




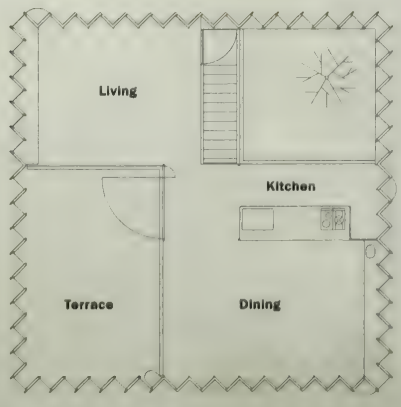
Natural Ellipse, Tokyo

Sited amid the glaring neon signs of Tokyo's Shibuya entertainment district, this one-bedroom duplex occupies a site barely 13 feet wide. Clad in rigid, fiber-reinforced plastic, the building resembles a zeppelin standing on end. Since views were bad, the house is toplit and nearly windowless. Its frame relies, with remarkable simplicity, on hoops of steel.

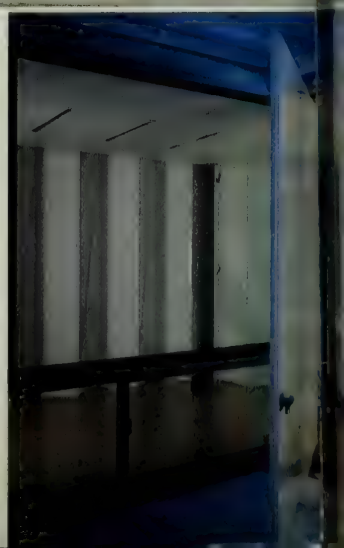




FIRST FLOOR



SECOND FLOOR



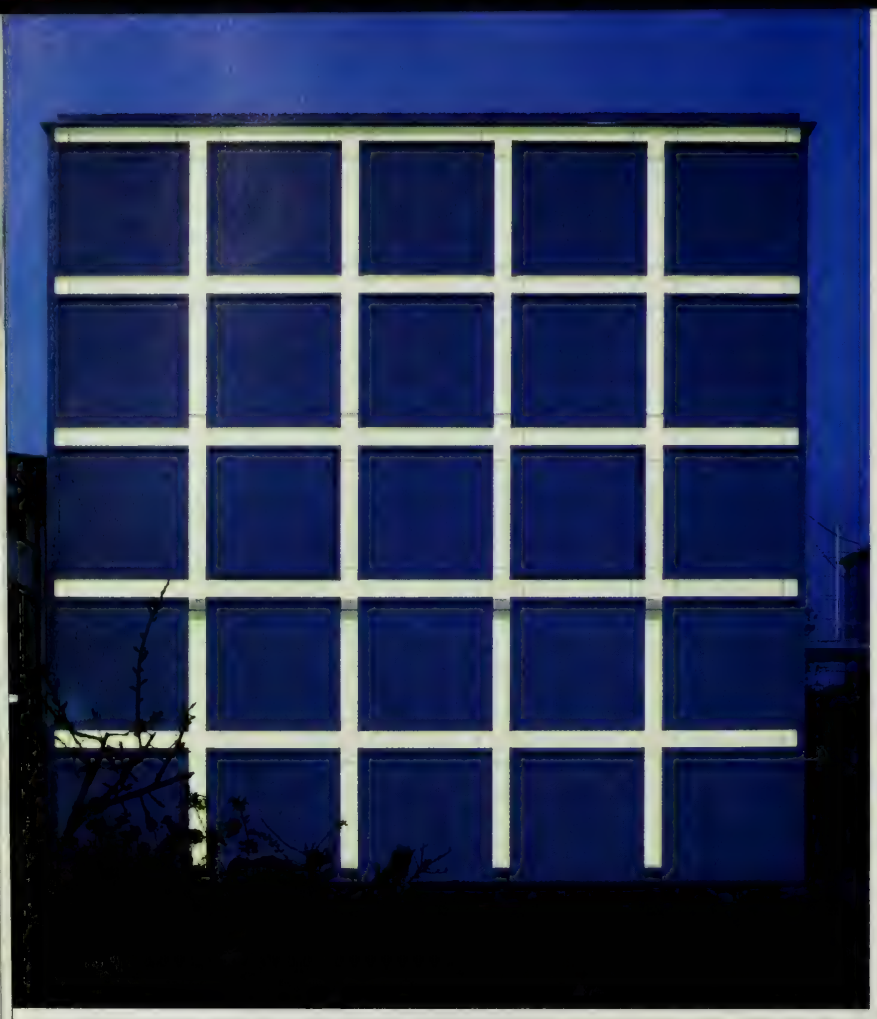
Natural Slats, Tokyo

For a residential site measuring less than 1,000 square feet, the architect filled the entire suburban Tokyo lot, rather than leave odd swatches of land around the house and its sole parking space. Endoh's solution engages a system of vertical slats that wrap indoor space, as well as such semi-outdoor areas as a driveway and roof deck. Here, the simple, single large volume projects a stronger presence than a set of more diminutive elements might have.







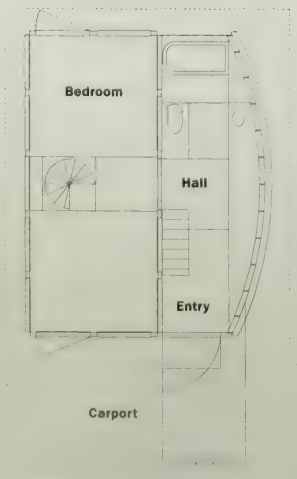




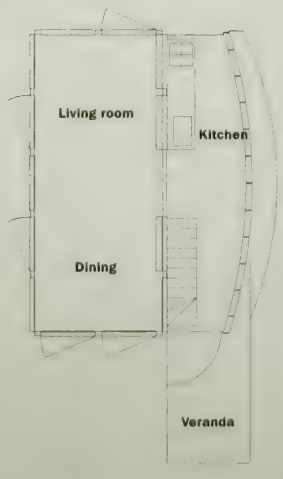


Natural Illuminance, Tokyo, Japan

This challenging urban site offered a narrow strip of land in a densely packed Tokyo residential district. Endoh addressed issues of privacy and boundaries with a gridded facade. Here, light enters only between square wall units of insulated steel, some of which incorporate storage. The house includes greater expanses of glazing on other elevations.



GROUND FLOOR

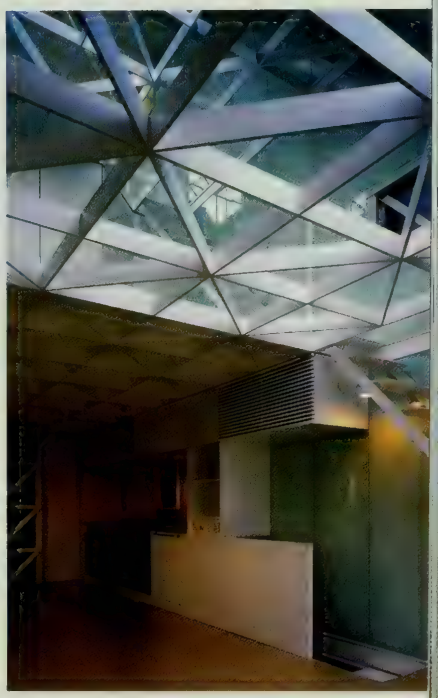


FIRST FLOOR

Natural Wedge, Tokyo

For a Tokyo site with a narrow frontage and footprint measuring less than 650 square feet, Endoh designed a 45-degree-wedge house. The shape complies with legal height restrictions while optimizing daylight entering the north-facing structure. Maximizing space and energy efficiency, Endoh devised a thin, translucent skin—a polyester insulating material mounted on a steel frame.



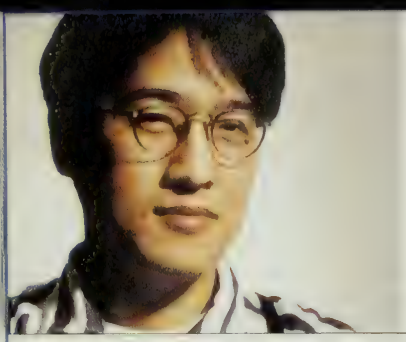


Natural Seam, Ichikawa, Chiba, Japan

This model house-turned-art-gallery established a prototype for a flexible structural system. Beneath a steel truss, the building is supported on structural columns, which could have been repositioned to fit nearly any plan shape.







Inspired by a fascination with stairs, **Akira Yoneda's** projects step in ever-new directions

By Naomi R. Pollock, AIA

Architect: Architecton
Location: Tokyo, Japan
Founded: 1991
Design staff: 4
Principal: Akira Yoneda
Education: Harvard GSD, M.Arch., 1991; Tokyo University, M.Eng., 1984, B.Eng., 1982
Work history: Practice—Takenaka Corporation, 1984–89; Academic—Kyoto Institute of Technology, 2004–present
Key completed projects: HP, Tokyo, 2004; Conoid II, Tokyo, 2004; BLOC, Kobe, Japan, 2002; Conoid, Tokyo, 2002; Beaver House, Tokyo, 2002; nkm, Tokyo, 2001; Ambi-Flux, Tokyo, 2000; House E, Kanagawa, Japan, 1999; White Echoes, Tokyo, 1998
Key current projects: White Base, Tokyo, 2005; M House, Tokyo, 2005; BLOC II, Kobe, 2006; BLOC III, Kobe, 2006

A device that introduces movement into static space" hooked Akira Yoneda on design, he recalls. That device was the stairway. So his graduate studies in architectural graphics at Tokyo University culminated in a thesis on Le Corbusier's use of stairs. But then, Yoneda's education and training shifted mode. "Those initial studies were," he explains, "very interesting, but a little removed from architectural design."

After a five-year stint—and lots of hands-on experience—at Takenaka, the construction giant, he remedied his design deficit by earning an M.Arch. degree at Harvard's Graduate School of Design.

Upon returning to Japan, Yoneda got his chance to try his hand at stairs in White Echoes, a 1998 Tokyo house for a couple with three children and a live-in grandfather. Though small, the property straddled two zoning areas: one low-scale residential and the other higher-scale commercial. Capitalizing on this disparity, Yoneda's firm, Architecton, conceived of the building in section, with a tall vertical volume housing a stair around a central void, and a lower volume containing most of the living spaces.

But the architect's talents really stood the test with Ambi-Flux, a so-called pencil building in the heart of Tokyo. A five-story structure, it stands on a 13-foot-wide site, squeezed between a bicycle repair shop and a Japanese greasy spoon. The building rises from two floors of rental offices to the owner's three-story quarters, plus roof garden. At the home's core, a 39-foot-high void extends up to a glass roof. A folded-metal stair winds around this light-filled court, ascending to a bath and bedrooms.

Ambi-Flux marked a turning point for Yoneda: his first collaboration with Masahiro Ikeda, the structural engineer of choice for many young Tokyo designers. An architect himself, Ikeda is prized for his willingness to investigate new, often unheard of ways to make buildings stand.

The Yoneda-Ikeda team later produced BLOC, a house in Kobe's Rokko Mountains. Taking advantage of the site's spectacular Inland Sea view, while editing out neighboring buildings, the architect raised and dramatically cantilevered the main volume, hovering it over a glass-enclosed stair that anchors the structure to the ground.

In HP, a hybrid post-and-beam house, Yoneda and Ikeda created a "twisted" wall: a hyperbolic paraboloid of dry-wall construction that is sculptural, functional, and structural, creating an outdoor, off-street parking spot and, indoors, a huge reflecting panel for the abundant rays filtering through a skylight overhead.

Yoneda's current projects on the boards include a four-unit apartment building and a 6,000-square-foot house for a 30-something illustrator with a strong cult following. Inspired by the client's futuristic cartoons, the designers stacked four boxy volumes, placing living spaces at the top, a studio below grade, and a pristine garage for the owner's DeLoreans and Ferraris in between. Big and brawny, the building bends skyward. With a scale jump from Yoneda's previous work and structural innovations that let the top story hang from the back of the house, the architect seems to be stepping in new directions. ■



M House, in Tokyo (above), is slated for completion in 2005 or 2006.



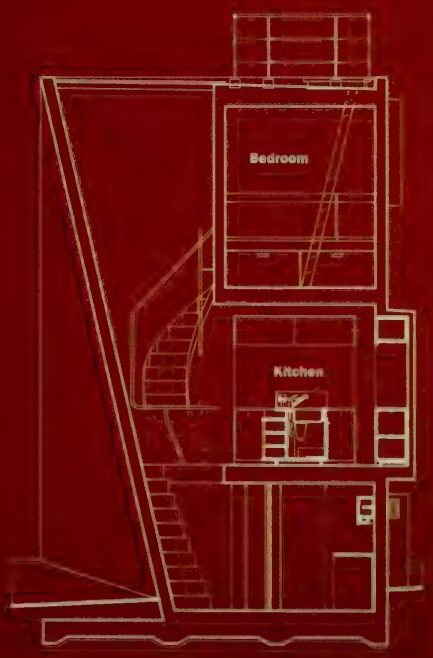




HP, Tokyo



For this 664-square-foot timber-frame house, a hybrid post-and-beam structure, Yoneda and Ikeda created a "twisted" exterior wall. With this sweeping gesture, the hyperbolic-paraboloid (HP) surface performs sculpturally, functionally, and structurally, creating off-street parking and a three-story reflecting panel for rays passing through the skylight.









BLOC,
Kobe, Japan

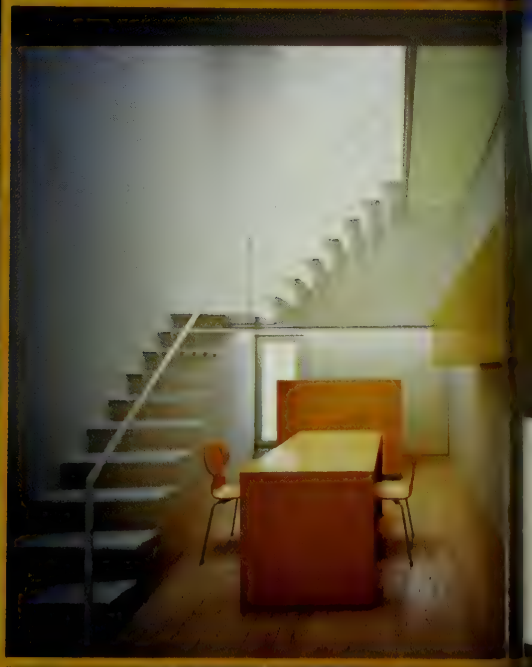
Yoneda built this 2,610-square-foot house for a woman who had lost her family homestead in the Great Hanshin earthquake of 1995. Taking advantage of spectacular sea views, while editing out neighboring structures, the architect raised and dramatically cantilevered the main volume, allowing it to hover over a glass-enclosed stair that anchors the building to the ground.











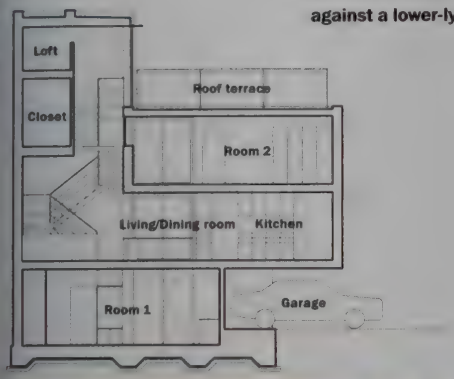


Ambi-Flux, Tokyo

Ambi-Flux, a five-story pencil building in the heart of Tokyo, stands on a 13-foot-wide site, squeezed between a greasy spoon and a bicycle repair shop. This structure marks the first collaboration between Yoneda and Ikeda. The owner's three-story quarters, with a roof garden, rises above two floors of rental office space. At the home's core, a 39-foot-high void extends up to a glass roof

White Echoes, Tokyo

After returning o Japan from his studies in the U.S., Yoneda designed White Echoes, a Tokyo house for a couple with three children and a live-in grandfather. The small property straddles a low-scale residential and a higher-scale commercial zone. Capitalizing on the disparity, the scheme plays a tall vertical volume against a lower-lying one.









White Base, Tokyo

This 6,000-square-foot house, in Tokyo's dense urban outskirts, will provide a young illustrator with a home and studio. Inspired by the client's futuristic cartoons, the scheme offers dramatic cantilevers. Here, a stack of four boxy volumes place living spaces at the top, a studio below grade, and a pristine, white garage for DeLoreans and Ferraris in between.





Alejandro Aravena pursues a dual path: high-profile projects and low-income housing

By Nancy Levinson

Architect: Alejandro Aravena
Location: Santiago, Chile
Founded: 1994
Design staff: None. Hires people on a project-by-project basis. Currently has 10 people working in office.
Principal: Collaborates with other architects on a project-by-project basis: Fernando Perez (Medical School); Luis Lucero (Medical, Mathematics, and Architecture schools); Lorena Andrade (Architecture School); Claudio Blanco (Montessori School); Jorge Christie and Victor Oddó (Pirehueico House); Charles Murray, Ricardo Torrejón, Alfonso Montero (Siamese Towers and Elemental); Andres Iacobelli (Elemental)
Education: Universidad Católica de Chile, B.Arch., 1992
Work history: Academic—Harvard Graduate School of Design, 1999–present; Universidad Católica de Chile, 1994–present
Key completed projects: Medical School, Universidad Católica, Santiago, 2004; Montessori School, Santiago, 2001; Mathematics School, Universidad Católica, Santiago, 1999; Sculptor's House, Santiago, 1998
Key current projects: Architecture School, Universidad Católica, Santiago, 2004; Elemental Quinta Monroy, Iquique, Chile, 2004; Pirehueico House, Pirehueico Lake, Chile, 2004; Siamese Towers, Universidad Católica, Santiago, 2005
Web site: www.elementalchile.org

In a decade of practice, Alejandro Aravena has designed a doze major projects, published three books, taught internationall exhibited widely, and racked up an assortment of honors. Soon aft his 1992 graduation from the Universidad Católica de Chile, with only few residential and retail works in his portfolio, Aravena won the job t design a building for the mathematics faculty of his alma mater. As h recalls, he got the project "because the budget was very low, so nobod expected the building would amount to much." The project's succes earned Aravena more university work, including Católica's schools o medicine and architecture, and its digital technology center, about to sta construction. He is also working on a national concert hall and a metro politan promenade, both in Santiago. Now a professor at Católica, he ha also been a visiting professor at Harvard for the past five years.

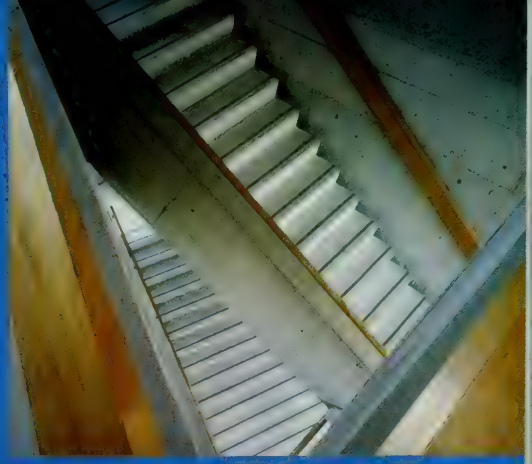
Yet what especially excites Aravena these days is not his growin international profile, but rather his ongoing involvement in the design o low-cost housing. In 2001, along with fellow Chilean architect Pabl Allard and engineer Andrés Iacobelli, Aravena founded Elemental, a non profit organization dedicated to solving the problems of what they term "scarcity housing." And as part of the group Taller de Chile, Aravena helped design the Quinta Monroy community for 100 families in north ern Chile; the new housing, which replaces an illegal development, is a prototype for Elemental's ambitious social housing agenda. "In Chile more than 10 percent of the population is without housing," says Aravena. "This is a problem that really matters." Inspired by the 1927 Weissenhofseidlung housing exhibition in Stuttgart, Elemental organized an international competition for the design of seven communities of about 200 units each in cities throughout Chile. The competition attracted more than 730 entries, even though the constraints were daunting: Housing units could cost no more than $7,500, and their designs had to anticipate the owner-occupants' do-it-yourself expansions. In November 2003, the jury selected seven winners. Construction is to start next year. Elemental has allowed Aravena to satisfy his longstanding goal of "using architecture to solve nonarchitectural problems." As he says, "I'm not running the race that will lead to publication in *El Croquis*. I'm more interested in connecting with readers of *The Economist* and *Time*." Nowadays, he is as likely to be meeting with World Bank executives and government ministers as with design-world colleagues.

Publication venues aside, Aravena's focus on bare-bones housing is not counter to but rather part of his ongoing exploration of form and tectonics. While traveling in Venice as a student, Aravena spent his days out in the field, sketching and measuring buildings. "I needed to connect very directly with the body of knowledge of my discipline." The architect's connection with this knowledge informs both his professional practice and his public work. And so it's no surprise that Aravena believes that good design will be essential to Elemental's success. As he puts it, "In social housing, good design is good policy." ■



Elemental is building this low-income community in Iquique, Chile, for 100 families.

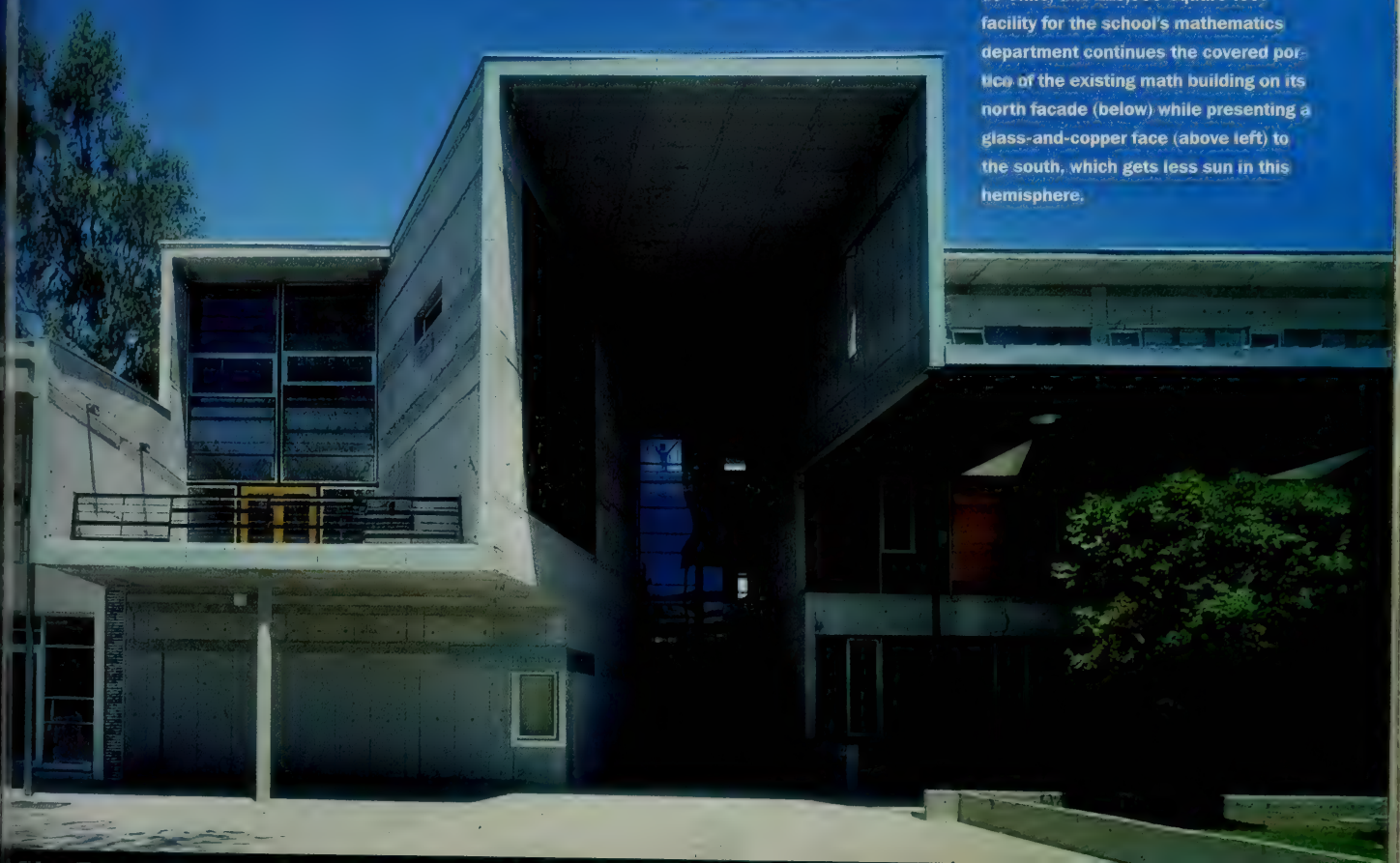






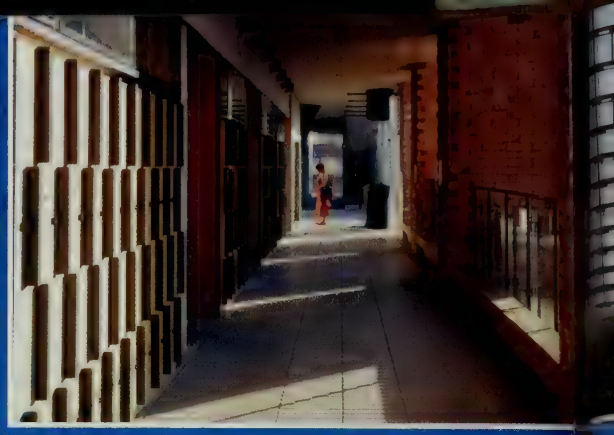
Mathematics Faculty, Santiago, Chile

The first in a series of buildings Aravena has designed for Universidad Católica de Chile, this 215,000-square-foot facility for the school's mathematics department continues the covered portico of the existing math building on its north facade (below) while presenting a glass-and-copper face (above left) to the south, which gets less sun in this hemisphere.



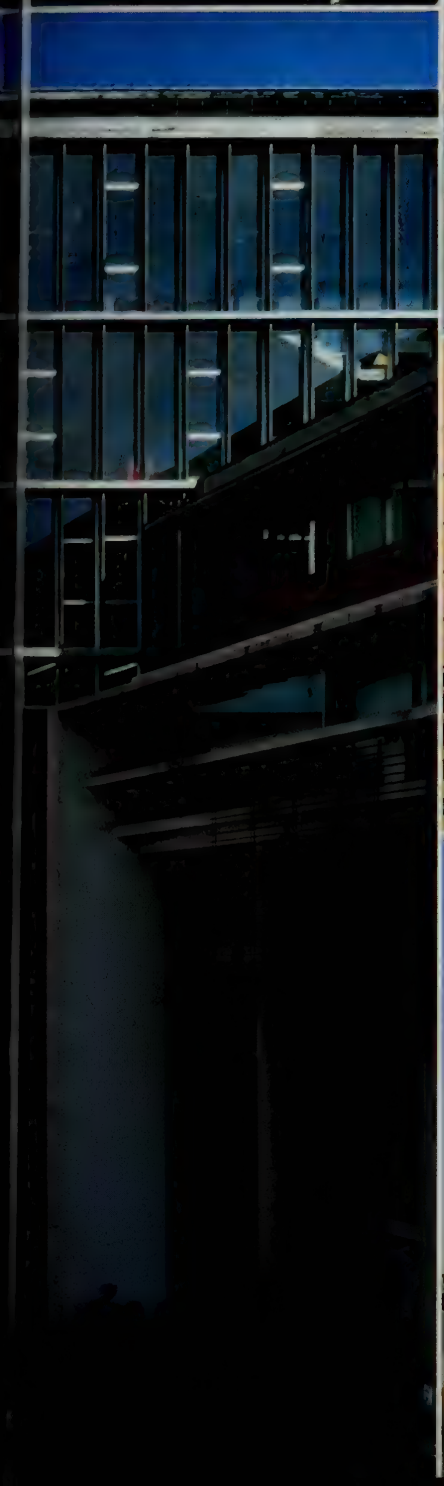
Medical School, Santiago, Chile

Aravena calls this 975,000-square-foot building a "vertical cloister" because it stacks a dense set of seminar cells, classrooms, labs, lounges, and auditoriums. The building completes an important courtyard on the campus, providing a sculptural redbrick facade as the fourth side. Although the tight program didn't allow any double- or triple-height spaces, the architect carved out large "voids" to bring in light, and cantilevered a glass lounge over the south entry.



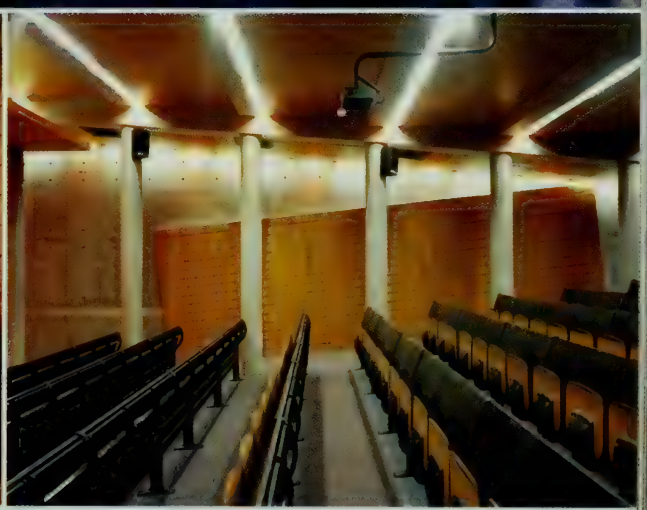




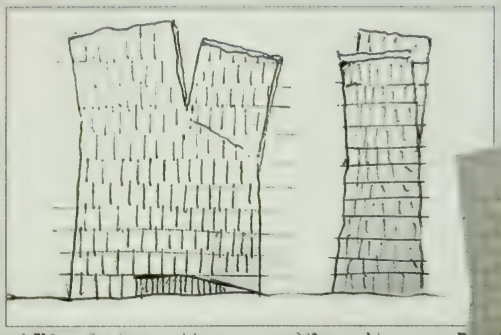












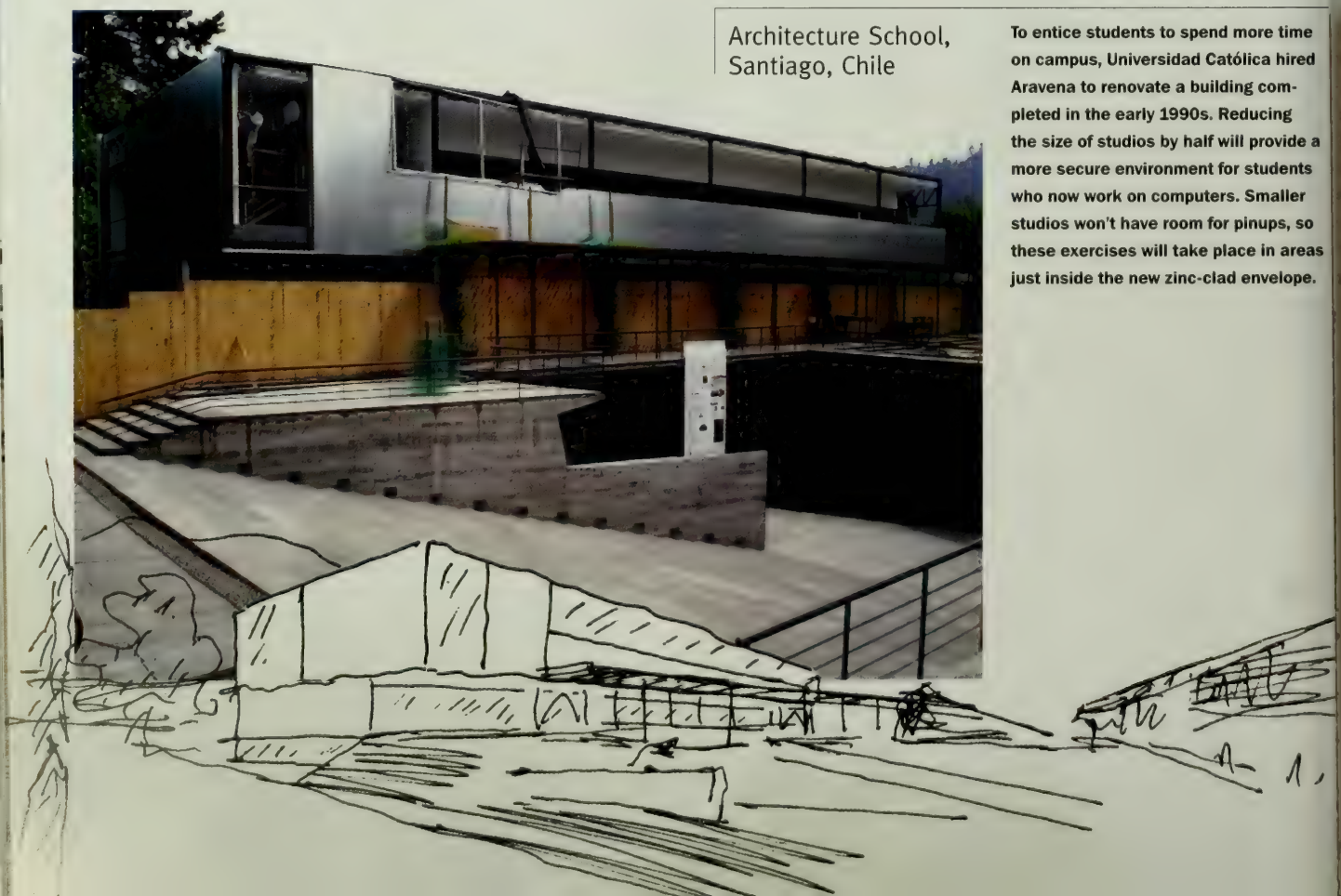
Siamese Towers, Santiago, Chile

Another project for Universidad Católica, this building will be a computer center with offices, research spaces, classrooms, and of course, lots of computers. To give the structure a sense of height, Aravena split the mass into conjoined towers. Scheduled to be completed in 2005, the 54,000-square-foot building will have an outer skin of glass and a more solid inner membrane.



Architecture School, Santiago, Chile

To entice students to spend more time on campus, Universidad Católica hired Aravena to renovate a building completed in the early 1990s. Reducing the size of studios by half will provide a more secure environment for students who now work on computers. Smaller studios won't have room for pinups, so these exercises will take place in areas just inside the new zinc-clad envelope.





Montessori School, Santiago, Chile

Given just four months to design and build a low-budget renovation and addition to an existing school, Aravena performed what he calls "emergency architecture." The client insisted that he use fake-wood siding, so the architect explored new ways of applying the artificial material, treating it like wallpaper and revealing "clouds of regularity" in its patterned surface.





Sculptor's House, Santiago, Chile

Designed for a woman who lives by herself but entertains often, this 1,300-square-foot house picks up the brick of the client's nearby sculpture studio. A tight budget kept the rooms small, but Aravena made them feel bigger by having visitors enter them at the corners and first viewing them on the diagonal. He kept the forms simple to match the skill of the bricklayers.





Spain's Antón García-Abril finds freedom in materials on the outer fringes

By David Cohn

Architect: Antón García-Abril and Ensamble Studio
Location: Madrid
Founded: 1995 (Antón García-Abril); 2000 (Ensamble Studio)
Design staff: 7
Principal: Antón García-Abril Ruiz
Education: ETSA Madrid, Doctorate, 2000; ETSA Madrid, M.Arch. and Urbanism, 1995
Work history: Alberto Campo Baeza, 1990–94; Santiago Calatrava, 1992
Key completed projects: Concert Hall and Music School, Medina del Campo, Spain, 2003; Musical Studies Center, Santiago de Compostela, Spain, 2002
Key current projects: Martemar House, Málaga, Spain, 2004; SGAE Central Office, Santiago de Compostela, 2005; Príncipe Pío Theater, Madrid, 2007
Web site: Under construction

While Spanish architects are known for seamlessly meldin design aesthetics and construction know-how, Madrid-base Antón García-Abril carries this love for what he calls "the fra grance of the constructive" to a new level, building much of his wor through an in-house contracting firm. This gives him the freedom t experiment with new building systems that traditional contractors woul shun, he explains, including materials on the outer fringes of solidity an fragility—from boulder facades to partitions built of plastic CD case

García-Abril worked in the studio of Alberto Campo Baeza as student, while family friend Rafael Moneo gave him personal critiques o his student projects. He describes these two mentors as working fro opposing extremes of poetic and intellectual inspiration, influence reflected in his own work. His first building, a music school in Santiago d Compostela, is a tour de force in the use of local granite. Conceptually, i is a solid half-cube of stone with public spaces hollowed out of its cente along three axes. Its primitive density is underscored by the massiv blocks of the facades—each weighing up to 11,000 pounds—with thei rough, drilled, and split faces exposed to the exterior.

The architect has carried experiments with heavy masonry wild step further for Spain's General Society of Authors and Editor (SGAE). A 285-foot-long curving wall is composed of granite boulder piled into the modular proportions of a "Palladian double order," with primitive base, columns, and lintels. The tumbledown construction also recalls Stonehenge—a reference to Galicia's ancient Celtic culture—and disordered bookcase, symbolizing the SGAE's role in collecting royalties for musicians and writers. At an opposite extreme, the main interior wal will be built of plastic cases from the 400,000 pirated CDs that the SGAE helps authorities confiscate annually.

García-Abril's experiments with geometrically free, triangulated structures dominate his studio. These range from light fixtures composed of aluminum studs and colored fluorescent lamps, to a prototype sky- scraper (left) rising irregularly around a flamelike vertical axis. He points out that triangulated structures are the strongest for torsional loads, and compares his tower prototype to the chassis of a motorcycle, in which crystal-like smaller units are encrusted into the main structure. "The problem with conventional struc- tures," he says, "is that in order to inhabit the horizontal plane, we have invented a structural deformation, the right angle, that is the least stable of all. Its stability depends entirely on the rigid- ity of its connections."



A model for a skyscraper has pride of place in García-Abril's studio.

Among ongoing projects, a seaside house is suspended below heavy trusses, including an 80-foot-long I-beam whose profile forms a rough cornice. An artist's studio at a rehabbed factory, meanwhile, features walls and patios lined with translu- cent polycarbonate sheeting backed by fluorescents. It's worth noting that these are private commissions in a country known chiefly for its public architecture. García-Abril's career marks the coming of age of a young talent, and the increasing maturity and audacity of Spain's architectural culture in general. ■



ɔncert Hall and Music
:hool, Medina
el Campo, Spain

García-Abril won a competition for a concert hall on a small trapezoidal site facing Segovia Square. The building sits on a concrete base, which forms an open public anteroom above street level. An outer skin, which the architect likens to a "suit of armor," is a series of horizontal steel scales that are projected out from the lattice of steel structural members. The auditorium has the classical proportions of a double cube, its folded walls dotted with light.

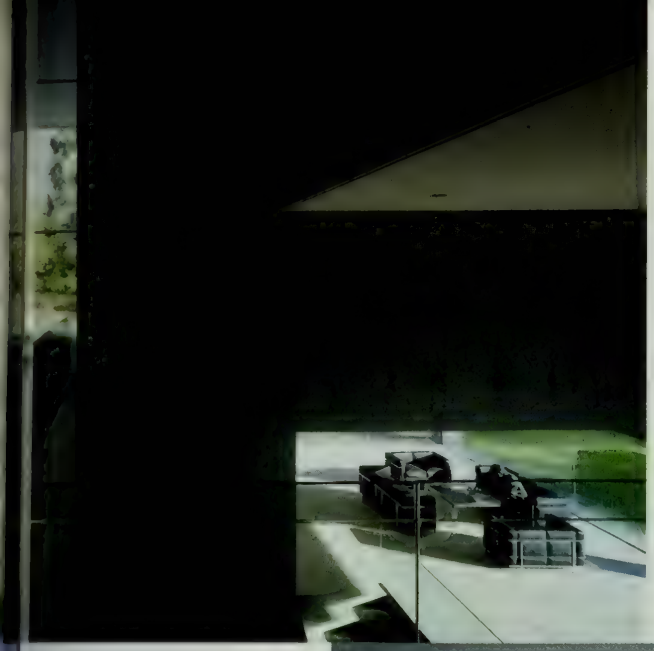






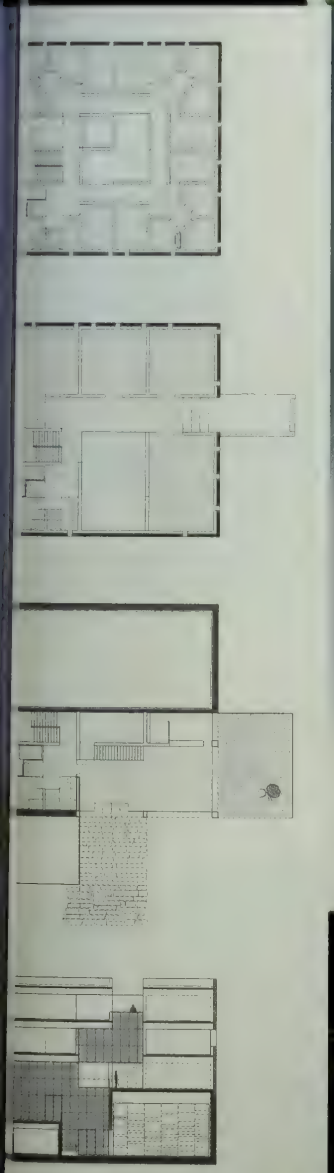






Musical Studies Center, Santiago de Compostela, Spain

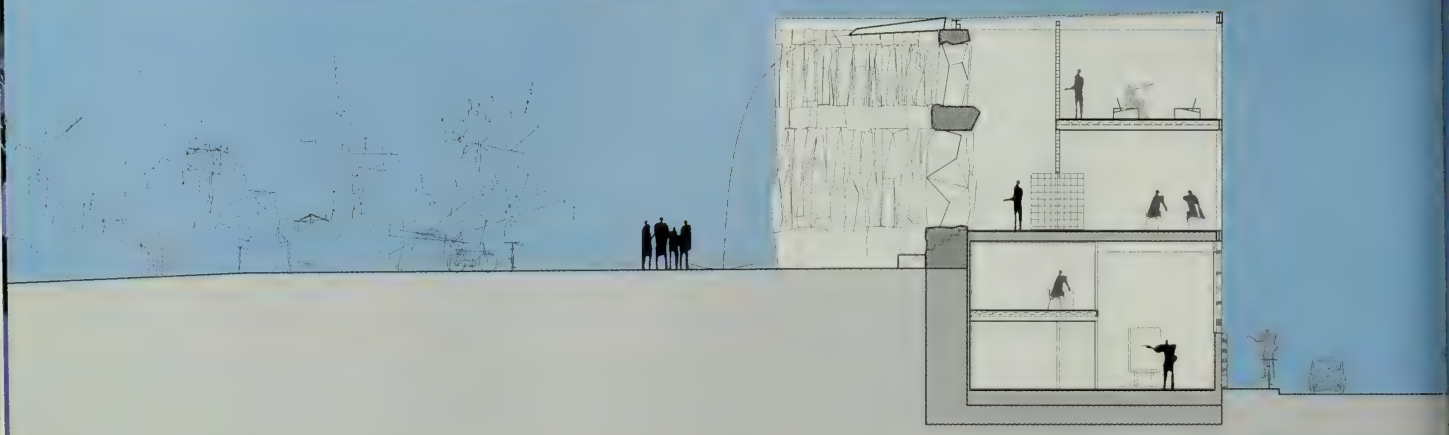
Employing ancient stone-cutting techniques, the granite facade is composed of stones presenting the rough-hewn sides along which they have been split. García-Abril explains that this high-relief surface gives the tenuous light of Galicia "the chance to trap the volume, to grab hold of it and allow it to reveal itself." Spaces with specific acoustic requirements were constructed over a concrete basement. Upper floors are ordered around wheel-shaped walkways that narrow as the building ascends.





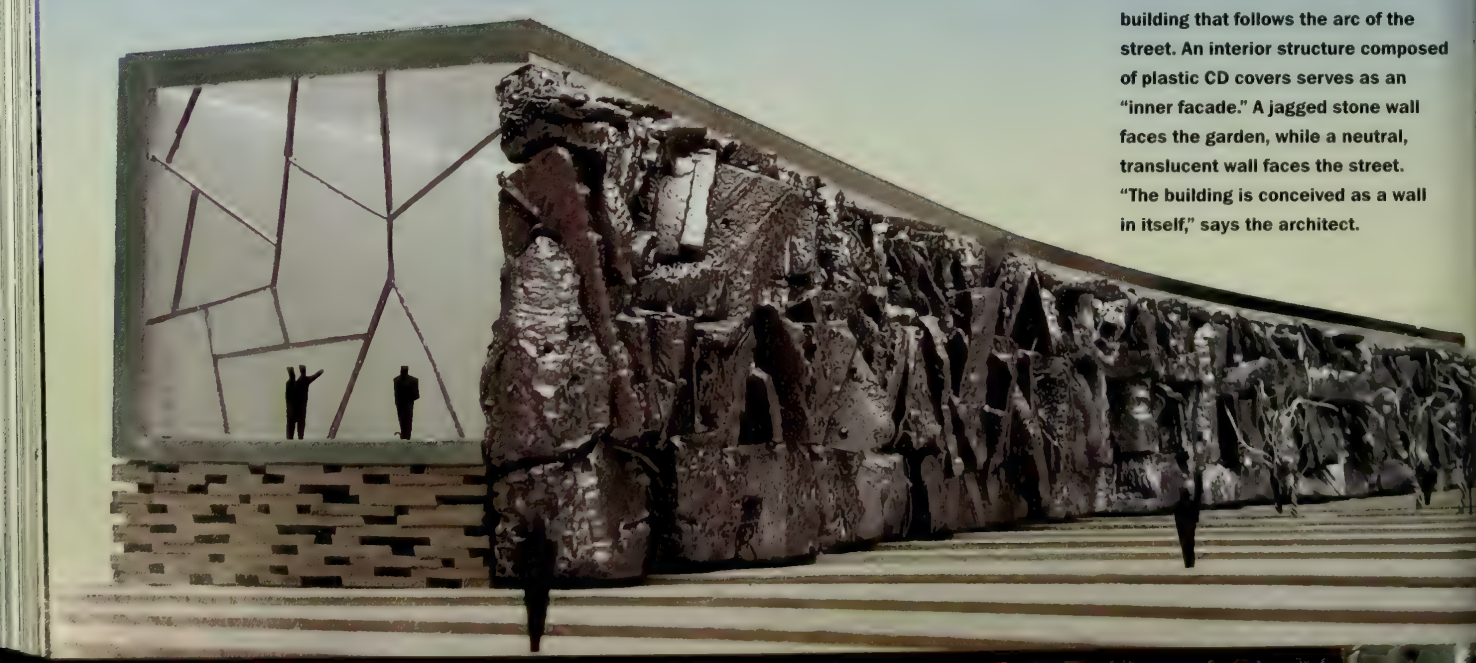






SGAE Central Office, Santiago de Compostela, Spain

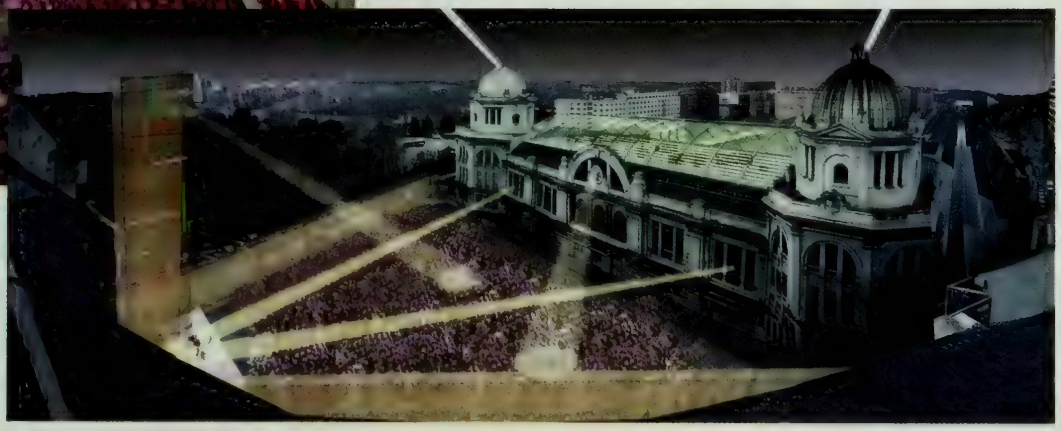
For the headquarters of Spain's General Society of Authors and Editors, the architect juxtaposed three walls running the length of a long, curved building that follows the arc of the street. An interior structure composed of plastic CD covers serves as an "inner facade." A jagged stone wall faces the garden, while a neutral, translucent wall faces the street. "The building is conceived as a wall in itself," says the architect.





Príncipe Pío Theater, Madrid

An experimental theater facility will occupy the interior of a landmark-protected railroad station. A large, flexible black-box structure, which García-Abril calls a "hybrid theater room," features stages and performance platforms at different levels with retractable seating. The project is financed by actor Antonio Banderas and the SGAE.



Martemar House, Málaga, Spain

For a private residence on a sloping seaside site, García-Abril has organized the program of living zones with the structural system. Two main portal frames, one concrete along the garden facade, the other steel overlooking the entrance, support five steel cross trusses. Masonry and glass walls are juxtaposed to create a progression of public and private spaces that relate to terraces surrounding the house.







Plasma Studio eschews iconography in favor of ambience and relevance

By Sara Hart

Architect: Plasma Studio
Location: London and Sesto, Italy
Founded: 1999
Principals: Eva Castro, Holger Kehne; Ulla Hell (associate)
Education: Castro: Architectural Association, AAGDG, Grad Des Dipl (AA), 1996; Universidad Central de Venezuela, Diploma Arquitectura & Urbanismo, 1994; Kehne: University of East London, Dip Arch, 1998, BSc (Hons), 1996.
Work history: Castro: Plasma Studio, 1999–2005; Chora, 1997–98; Ocean, 1996–97; Kehne: Plasma Studio, 1999–2005.
Key completed projects: Minerva Street, London, 2003; Circus House, London, 2003; Musician's Home, London, 2001; 25 London Lane, London, 2001; 186 Camden High Street, London, 2000; 136 Old Street, London, 1999
Key current projects: Hotel Puerta America, Madrid, 2005; Hotel Cristall, Sesto, Italy, 2007.
Web site: www.plasmastudio.com

It takes a lot of confidence to name an architecture firm Plasma. It could end up in the telephone book under "night clubs." The firm's founders Eva Castro and Holger Kehne have earned the necessary confidence, as their growing portfolio of completed commissions confirms. The concept behind the name is worth noting. Looking for a metaphor to wrap their design philosophy around, they turned to physics. By naming their practice Plasma, after the fourth state of matter, they seek to separate themselves from convention, even from the parameters of Cartesian construction. If one were to think of most architecture as falling, at least metaphorically, into the other, better-known states of matter—solids, gases, and liquids—the firm's differentiation becomes apparent. Castro and Kehne make the distinction by describing the plasma state as "a unique condition of matter arising from a complex overlay of external forces."

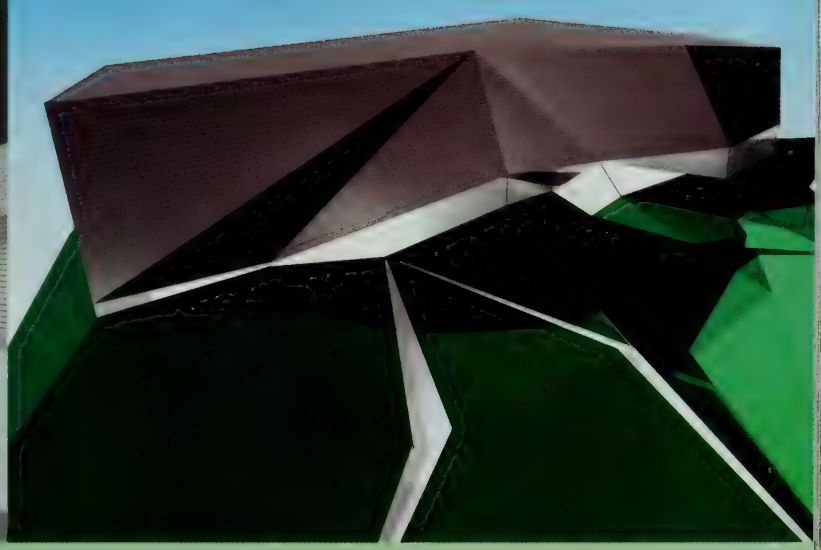
During the past five years, Plasma has pursued a variety of building types, mostly in London. These include office renovations, retail, artists' studios, and various live/work conversions. In addition, the practice has designed several exhibitions, installations, and furniture. Two current hotel projects, the interior of a radical design hotel in Spain and a newly built mountain resort in Italy, are contributing to the practice's current expansion: They have recently opened a new branch in Sesto, Italy.

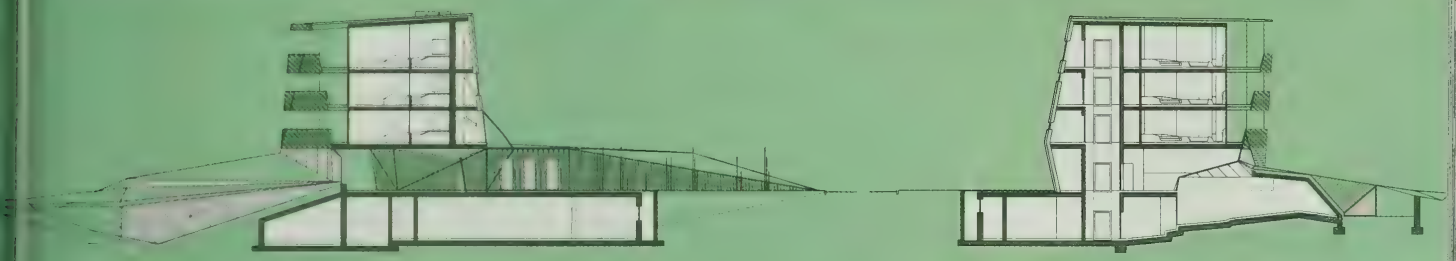
Plasma is often described as the most energetic of the four states of matter. Plasma, the firm, matches that by being intellectually agile, and it has won awards and commissions for its creative use of form and geometry. Not bound to the x and y axes, the designers use shifts, folds, and bends to create surface continuities that are never arbitrary, but part of the overall spatial and structural organization. "Our projects seek to expand from such traditional orthogonal patterns. Their advantages (in terms of human scale, clarity, and versatility, for instance) are capitalized and used as modeling instruments in the design process," they explain. A reduced palette of materials and colors with Minimalist detailing is used to emphasize such ephemeral occurances as light changes and reflections.

Although Castro and Kehne's work is fortified with theory, it's also grounded in material and economic reality. All their projects are geared toward maximizing space, performance, and value. Starting with a careful analysis of the site and the brief, the studio develops a thorough framework of the underlying contraints, objectives, and potentials. Tangible and intangible parameters, such as material, light, budget, usage patterns, atmosphere, weathering, and so on, are all equally processed as determining forces.

They also exploit every available technological innovation. Castro and Kehne are researching and developing parametric and emergent design processes through the use of 3D software and CAD-CAM modeling at the Architectural Association. They emphasize that these investigations make the design process more inclusive, interactive, flexible, and transparent for the designers, clients, consultants, and fabricators alike. ■

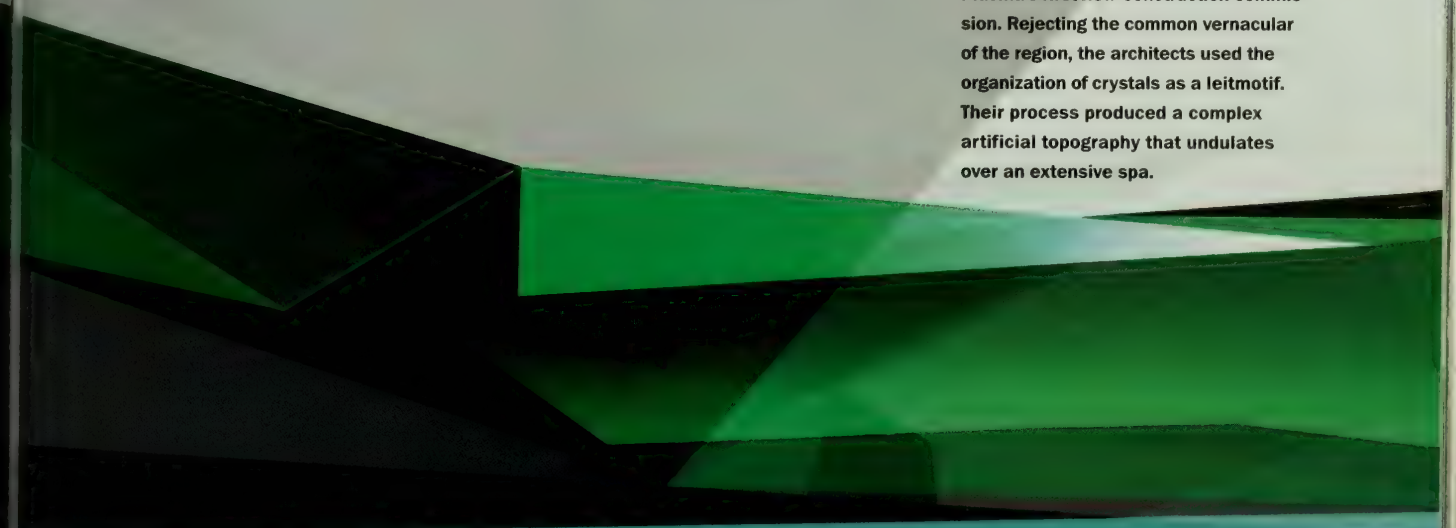


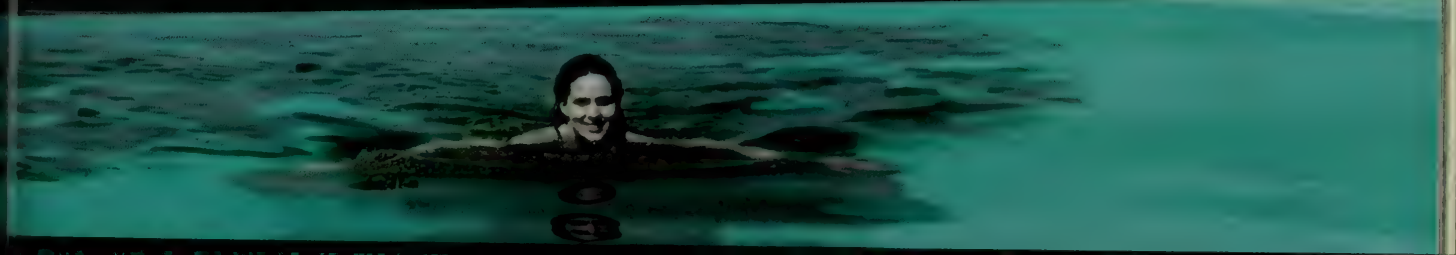




Hotel Cristall,
Sesto, Italy

Located in a small village in the Italian Dolomites, this four-star hotel is Plasma's first new-construction commission. Rejecting the common vernacular of the region, the architects used the organization of crystals as a leitmotif. Their process produced a complex artificial topography that undulates over an extensive spa.





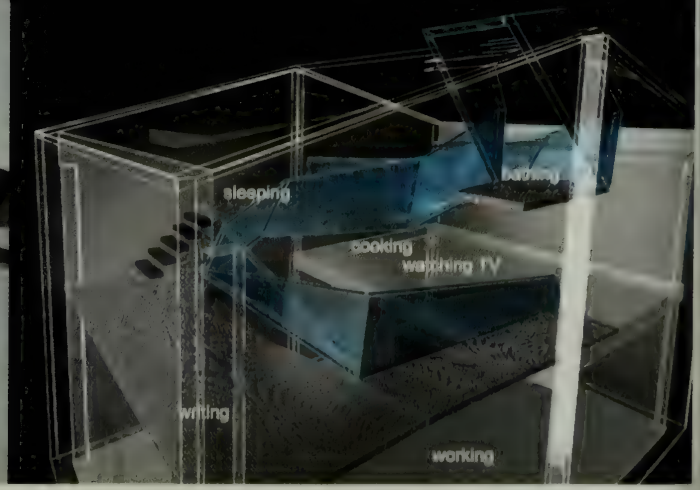






25 London Lane, London

The client, a silversmith, needed distinct spaces sculpted within his expansive live/work loft, without losing any of the natural light provided by an existing skylight. The solution involved creating spaces out of industrial-steel grating, which both transmits and deflects the light. The truss that supports the spiraling surfaces also acts as the balustrade.







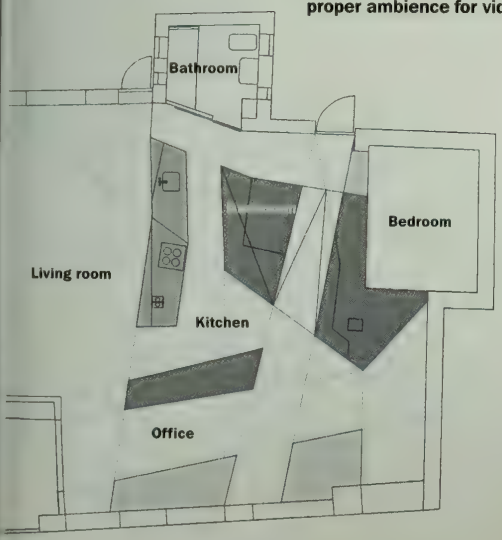
Crumple Zone, London

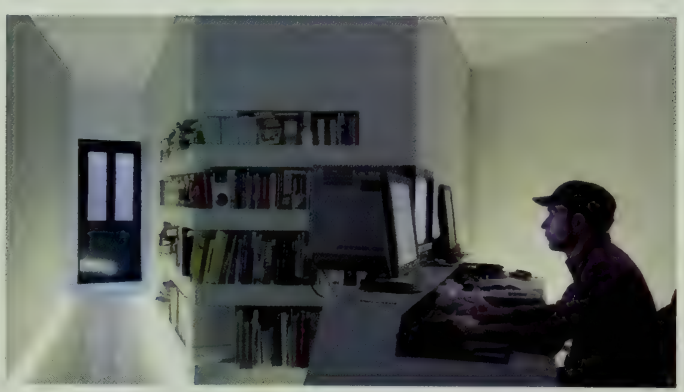
***Crumple Zone*, a site-specific installation, utilized CNC-punch-pressed steel with projected imagery to create a work that challenges the preconception of the Vitruvian principles of stability, utility, and beauty in the inaugural exhibition by Fractio, a not-for-profit curatorial collective supporting British fashion, art, design, and architecture.**



Minerva Street, London

In this conversion of the ground floor of an old industrial building, the architects introduced pods, finished in different shades of gray, which organize the space into zones with varying degrees of openness and enclosure. Fluorescent tubes along the bottom of the walls create the proper ambience for video production.







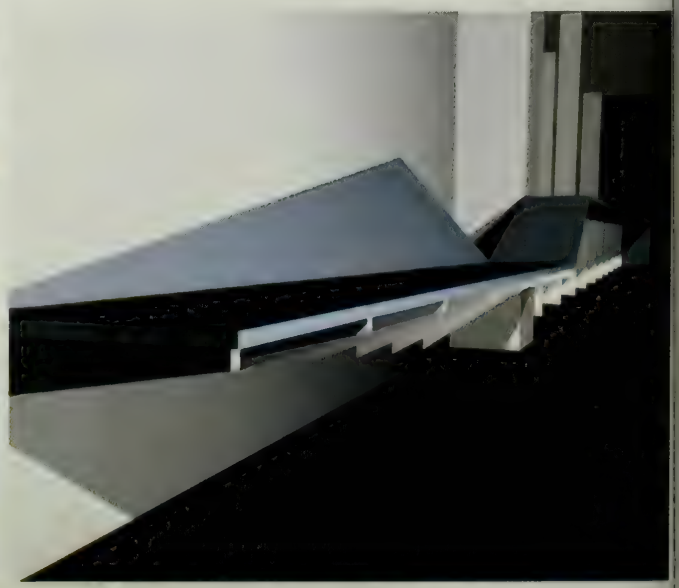






Circus House, London

This redesign for Feiden Clegg Bradley Architects provides for maximum flexibility. The overall flow pattern is a U with the corridors displaced on both levels, and a new internal staircase connecting them. The stair consists of solid slags of plywood suspended from full-height Perspex screens, corresponding with an extensive Perspex display system.



UrbaNite, London

With this one-night installation at a night club for *Architecture Week*, the architects sought to create a virtual space that embodied cultural mix and fusion through the use of projected images and film. The images were projected from either end of the room and strike screens covered with semitransparent film that both capture and filter the images.

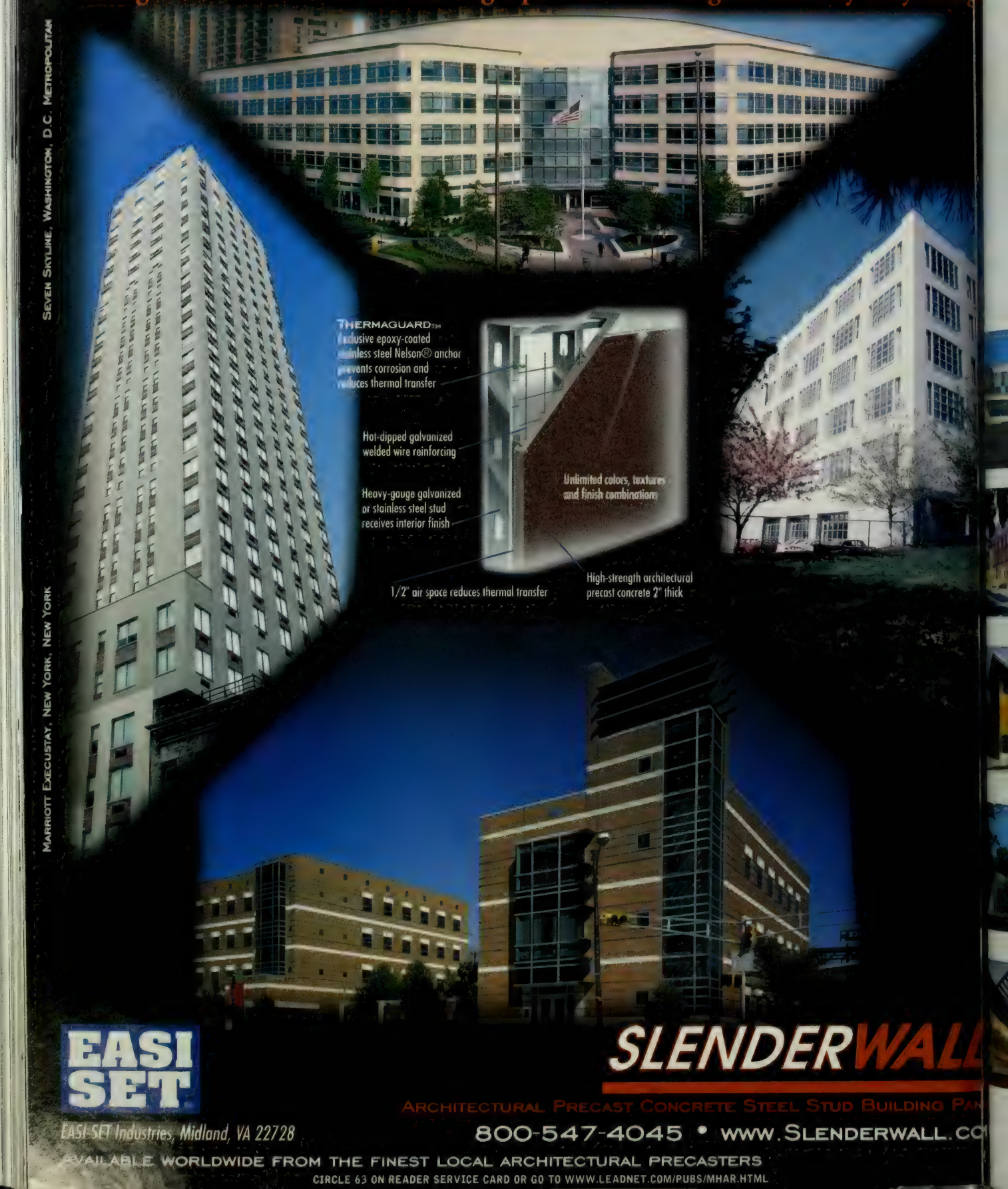






It's true.

Colleges and universities are making a permanent change in the way they desig



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The Boom Goes On

COLLEGES ARE BUILDING MORE, AND THEY ARE BUILDING BETTER. WITH STATES UNDER STRESS AND WORK DEMANDS RISING, WE MAY NEED TO BUILD FASTER AND BETTER YET.

By James S. Russell, AIA

Projects from higher education institutions, both plebian and elite, have poured into RECORD's offices this year. With such powerful evidence of the nation's commitment to college, RECORD was able to devote much of its August issue to a range of high-ambition projects and still be able to offer a rich mix this month. We saw not only quantity, but quality: designs that are sensitive to budgets yet still transcend the painted drywall and dropped-ceiling norm.

With too many students relying for their social life on iPods, video games, and e-mail, institutions are building to ease the stresses of meeting new people and fitting in. Charles Rose supplied the center that Brandeis University never had. (It's hardly alone.) Jonathan Levi responded to Harvard University's desire to lift graduate-student housing out of its customary squalor. Miller/Hull integrated plenty of meeting places into a small community-college campus of mostly part-timers.

Math and science remain high priorities, but many institutions, saddled with the legacies of a gigantic building boom of the 1950s and 1960s, are lookng for ways to fix old facilities, not just replace them. Margaret Helfand gracefully accommodated both growth and renovation at Swarthmore. Hers is a work of urban design as much as of architecture.

Community colleges often get orphaned by fiscally overstretched states. But legislators are increasingly paying attention to these systems, because meeting the demand for qualified workers has become a key factor in business expansion and relocation decisions. Anshen+Allen gracefully expanded an aging concrete-block hulk of a library at Santa Monica College, creating in the process a campus magnet, with reading areas beautiful enough to incite envy from far wealthier schools.

Olympic College is well-attuned to the fast-changing workforce desires of employers in its fast-growing, semirural region. Miller/Hull delivered a facility capable of rapid adaptation.

For all the good news, plenty of institutions face dire cash crunches. Many states remain fiscally stressed, incapable of meeting the needs of institutions where student bodies are growing just as fast as facilities are deteriorating. There's no doubt that future economic growth and global competitiveness rely on the nation's higher education system. The big question remains: Is America up to the challenge? ■

For more information about these projects, go to Projects at **www.architecturalrecord.com**.



1.

Waltham, Massachusetts

Charles Rose placed the Shapiro Campus Center at the crossing of a network of pathways, erecting a sun-dappled atrium over the intersection.



2.

Cambridge, Massachusetts

Reworking a former hotel, Jonathan Levi offers housing-pressed graduate students at Harvard University a variety of accommodations.



3.

Poulsbo, Washington

Miller/Hull interpreted Scandinavian style for Olympic College, constantly called on to adapt to the needs of a fast-growing, semirural area.



4.

Swarthmore, Pennsylvania

Margaret Helfand used new construction to stitch together outdated science buildings, creating a revived, more socially engaging whole.



5.

Santa Monica, California

Filtered daylight enlivens the three-story computer commons that Anshen+Allen dropped into Santa Monica College's dour 1970s library.

Shapiro Campus Center
Waltham, Massachusetts

1 **CHARLES ROSE PLACED A LIGHT-DAPPLED ATRIUM WHERE FOUR CAMPUS PATHS COLLIDE AND WRAPPED IT WITH A HIVE OF ACTIVITY.**

By Nancy Levinson

Architect: *Charles Rose Architects*
Client: *Brandeis University, Waltham, Massachusetts*
Consultants: *Arup (structural engineering, m/e/p); Stephen Stimson Associates (landscape); Accentech (acoustical); Judith Nitsch Engineering (civil)*
General contractor: *William H. Berry and Son*

Size: *65,000 square feet*
Cost: *$21 million*
Completion date: *October 2002*

Sources
Masonry cladding: *Cenia Limestone (Kenneth Castellucci and Associates, fabricator)*
Metal cladding : *Revere Evergreen Copper*
Roofing: *Firestone (single-ply membrane)*
Window wall, entrances: *Kawneer; Viracon (glazing)*
Millwork: *American Architectural Woodwork*
Custom railings: *Cape Cod Fabrications*
Terrazzo: *Depauli Mosaic*
Elevators: *ThyssenKrupp*

For more information on this project, go to Projects at **www.architecturalrecord.com.**



Protected by a broad overhang, a café and bookstore open to a sunny lawn on the south side of the Shapiro Center. Louvers shade a two-level library.

Brandeis University welcomed its first students in the fall of 1948, and since then the institution has been more or less under construction. In the past half-century, the wooded campus in Waltham, Massachusetts, has grown from a 90-acre site with a motley group of existing buildings—purchased from a defunct medical school—to more than a hundred structures on 235 acres.

Given the rapid pace of development, it's not surprising that functional imperative at times ran ahead of planning logic. By the mid-1990s, it was apparent that the pastoral postwar campus of the early years had long since grown into what the school's Web site describes as a "dense, more urban place." The question of how to deal with that growth spurred a 1997 planning and design charrette. One of its key recommendations produced the Shapiro Campus Center, designed by Charles Rose Architects. "At the charrette there had been general agreement that the campus lacked a real center," says Peter French, the university's executive vice president and chief operating officer. French notes that the center of the campus was then occupied by a nondescript redbrick building—one of the structures bought when the school was founded—and a big parking lot. "The location was a major campus crossroads," says French, "but it sent all the wrong signals."



Nancy Levinson, a RECORD *contributing editor, lives in Cambridge, Mass.*

Program

The new campus center would augment an existing student center to the north, and it would house





diverse tenants: the university bookstore, an electronic library, a 250-seat theater, the school radio station, the school newspaper, administrative offices that oversee student life, assorted student organizations, a café, and exhibition space. And beyond its program, the new facility would need to answer to evolving campus lifestyles: It had to be open and available round-the-clock, and it had to provide what the school had long lacked, a vital center worthy of both the name and location.

Solution

For Rose, who has training and experience in landscape architecture, the opportunity to enhance cross-campus connections was compelling. So too was the chance to create outdoor spaces that would enliven and extend the interiors. To the south, these include ground-level and second-floor terraces and an expansive green lawn; and to the west, a quiet and shady courtyard defined by Shapiro and the adjacent Faculty Club.

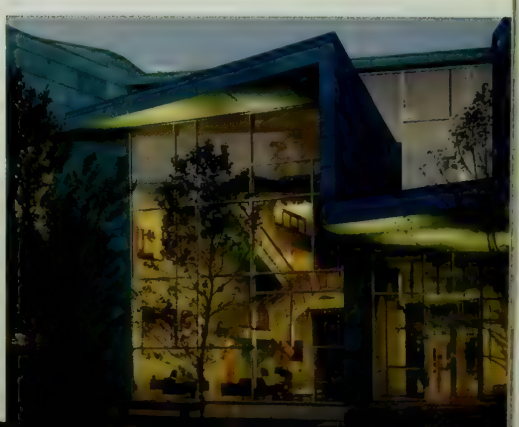
The Faculty Club, designed by Harrison & Abramovitz, is Modernist. In this, it's like much of the postwar campus: Eero Saarinen created the initial site plan, and the roster of campus architects also includes The Architects Collaborative, Hugh Stubbins, Benjamin Thompson, Hideo Sasaki, and Edward Larrabee Barnes. Before beginning Shapiro, Rose stud-

Copper faces the north wing of this campus crossroads (below and bottom left), while stone predominates on the south wing (bottom middle). Walkways bisect the building through recesses between the wings (top spread and bottom right).











THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

In plan (left), it looks as if the two wings, like tectonic plates, have floated apart, leaving behind a great open space where many paths can cross. The upper-floor bridges, like tendons, unite the two wings, while enlivening the great atrium with activity on three levels and on the stair (opposite).

1. *Atrium*
2. *Café*
3. *Bookstore*
4. *IT Library*
5. *Theater*
6. *Lounge*
7. *Club offices*
8. *Function room*
9. *Multipurpose*
10. *Mechanical*
11. *Terrace*
12. *Staff office*
13. *Gallery*







Skylights and broad planes of glass (above) scatter light across stairways and bridges to make the great atrium space luminous and active. Wood faces a two-level lounge (left).

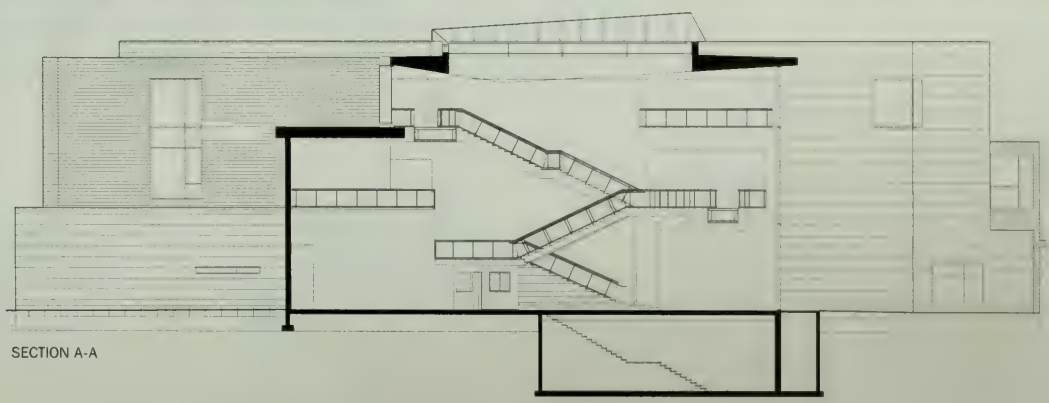
ied the campus carefully, noting the patterns and characteristics of its buildings and open spaces, and as a result he has made a strong, clear structure that neither mimics nor clashes with its context. In its forms and materials, Shapiro is by turns Minimalist and bold. The south facade, clad in limestone and pre-patinated copper, with windows of tinted glass, is gently inflected toward the large lawn. The sculptural north facade features large expanses of glass and copper. The copper is especially striking. "We wanted to add texture to the building," says Rose. "The copper, which we've used in small and large panels, seemed a good, interesting way to do that."

The 65,000-square-foot building provides for its numerous users in two wings connected by a three-story atrium. The atrium is more than the literal center of the building: With large glass walls to the north and south and bridges crisscrossing the upper levels, the space is energetic and inviting, and it has become the nonstop scene of assorted events, including art exhibitions and craft sales, dances and concerts, midnight buffets and slumber parties. And with its strong north/south and east/west axes, and entrances on all sides, the atrium is a major campus circulation link, drawing students and faculty to and through Shapiro both day and night.

Commentary

The Shapiro Campus Center clearly appears to be fulfilling its mandate to serve not merely as the geographic but also the functional and perceptual heart of campus. On a recent visit, the place was bustling: The library was standing room only; the atrium was hosting a poster sale; the café was packed. Administrators and students enthusiastically described how much they liked the building and how well it accommodated activities ranging from peer counseling to tango lessons. And one junior was especially effusive: "I practically live in this building," she said. Brandeis and its architect have given her a great place to live in. ■

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air (above) that verti-
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ection, right).



SECTION A-A

29 Garden Street
Harvard Graduate Housing
Cambridge, Massachusetts

2

JONATHAN LEVI ARCHITECTS CREATES AFFORDABLE UNIVERSITY HOUSING THAT ENCOURAGES A SENSE OF COMMUNITY AMONG GRADUATE STUDENTS.

By Nancy Levinson

Architect: *Jonathan Levi Architects—Jonathan Levi, FAIA, partner in charge; Matthew LaRue, AIA, project architect*
Associate architect: *Bergmayer Associates—Darryl Filippi, project manager; Doug Coots, project associate*
Client: *The President and Fellows of Harvard College*
Engineers: *Weidlinger Associates (structural); Cosentini Associates (mechanical/electrical); Green International Affiliates (civil); Richard Burck Associates (landscape); Lam Partners (lighting); Acentech (acoustics)*
General contractor: *Suffolk Construction; Bond Brothers*

Size: *114,000 square feet*
Cost: *Withheld*
Completion date: *August 2004*

Sources
Curtain wall: *Kawneer; Reynolds*
Roofing: *Genflex; Hydrotech*
Windows: *Efco*
Glass: *Solarseal*
Doors: *Blumcraft; Kawneer; Lambton Doors; Total Door*
Door hardware: *Schlage; Hager; LCN; Von Duprin; Blumcraft*
Acoustical tile: *Armstrong*
Paints: *ICI; PPG*
Lighting: *Lithonia; Nulux; B-K Lighting; Hydrel; Sylvania*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

Undergraduate life at Harvard has long revolved around the network of houses the university built in the 1930s—imposing neo-Georgian residences that accommodate communal dining and common rooms as well as living quarters. Graduate student life, however, has enjoyed no comparable amenity. For years, the majority of graduate and professional students who arrived in Cambridge had little choice but to hunt for a good deal on a rental—a nerve-racking pursuit in a market where limited supply and inflated prices meant that most settled for crowded housing in dumpy neighborhoods far from campus.

With the reopening of 29 Garden Street, designed by Jonathan Levi Architects, with associate architect Bergmeyer Associates, the choices have been happily enhanced. A thorough renovation of an undistinguished hotel from the 1920s, 29 Garden features well-appointed student apartments. It also includes a variety of shared spaces intended to encourage a sense of community, a first for the university's graduate apartment-house system.

Program

Harvard converted 29 Garden to housing years ago, but the renovation was modest in concept and effect, and the building needed upgrading. According to Susan Keller, vice president of residential real estate at Harvard, the motivations for this latest project were both economic and political. "Because of the tight and expensive housing market, and because of municipal pressure on the university to house more students," says Keller, "we wanted to increase the number of affordable apartments close to campus." The university also wanted to enrich its housing-type mix, adding the "double studio," consisting of two private living spaces that share a kitchen and bath.



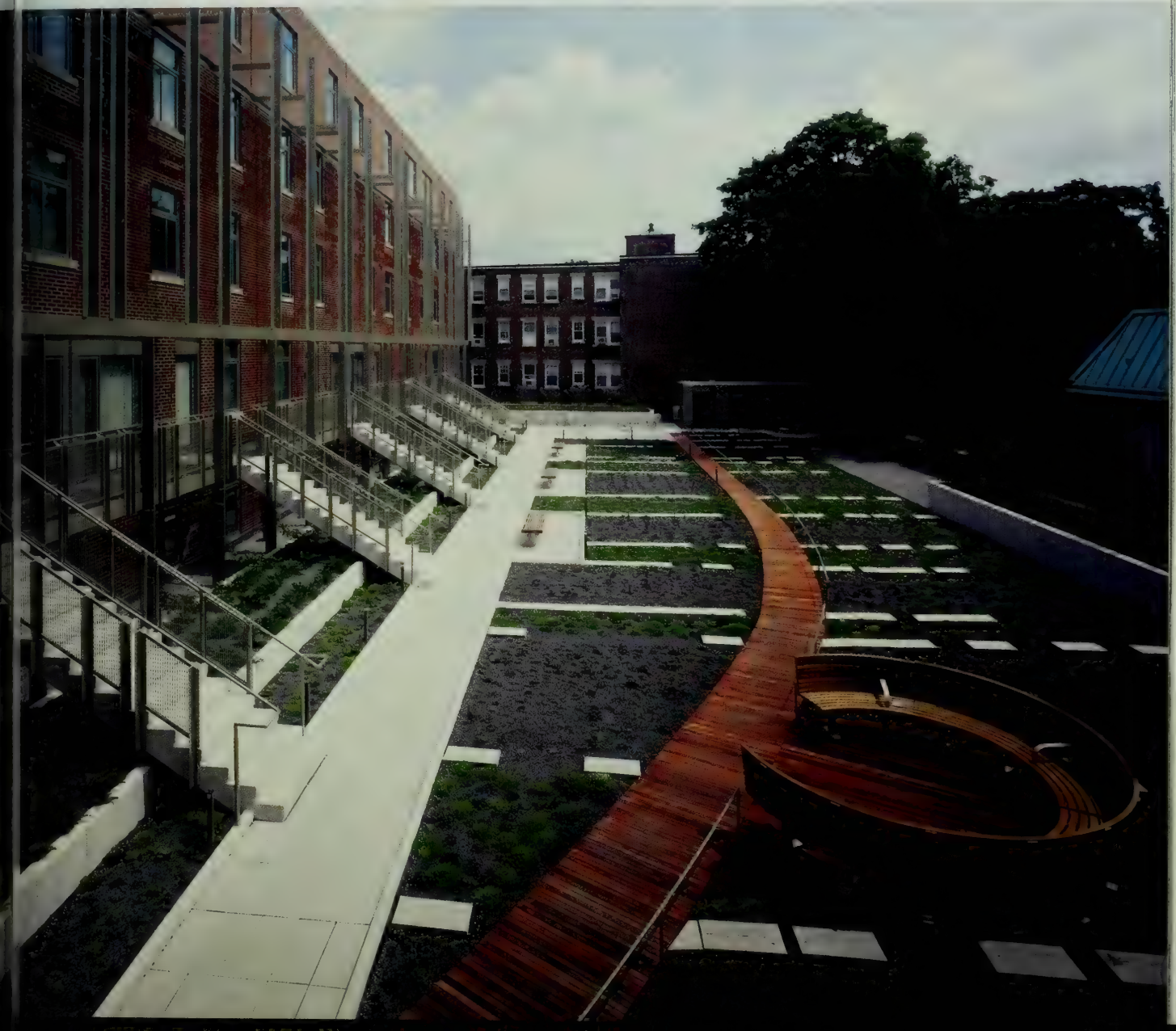
Solution

Jonathan Levi Architects responded to the university's requirements with two kinds of double studios. In the

Contributing editor Nancy Levinson is a writer and architect based in Cambridge, Mass.

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cts Arsenal Square
th the courtyard
rden designed by
chard Burck
sociates (right and
low). The garden
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artment building's
rking garage, a space
at was formerly
vered with blacktop.







Each of the three-bedroom, third-floor faculty apartments is accessed via stairs leading from the courtyard garden.





Entrances to faculty apartments are joined by a balcony that extends the entire length of the building (left and opposite). A newly created exterior passageway and grand stair lead from Garden Street (below) to the courtyard garden (top), one level above.



naller, students share a kitchen id bath; in the larger, each has a ivate bath. Three other residence pes—one-person studios and o- and three-bedroom apart-ents—complete the mix. And for ich type, the architect has signed stylishly contemporary ing quarters. Built-in shelves, bles, and desks "ease the move- transition for new students," in vi's words, and the birch-veneer binetry visually warms the rooms. tchens feature translucent-front binets (manufactured by Ikea, but ith custom-designed hardware) id undercounter refrigerators that low for maximum counter space. eiling-mounted convection heat-g/cooling valances are sleek, iet, unobtrusive, and energy effi-ent, and allow residents to control eir thermal environment. (Opening e window automatically switches f the mechanical system, another ficiency touch.)

But Levi did more than satisfy e basic program; ultimately, he nvinced the university to expand s understanding of 29 Garden's rogrammatic and urban potential.

Early on, the architect envi-sioned a project that would be more than just another university-owned apartment house. "We became interested in the idea of a 'graduate house'—something akin to the undergraduate houses, a place that would spur a sense of community," says Levi. "Since residents would be drawn from different schools and programs, we saw it also as fitting in with the academic trend toward greater mix-ing of disciplines." 29 Garden fully satisfies the university's quota for beds (increasing the number from 121 to 143). It includes a ground-floor buttery/convenience store with an adjacent dining/common room, and light-filled, double-height lounges on alternating residential floors. Especially impressive is a new garden (designed with the landscape architecture firm Richard Burck Associates) located on what had been the blacktop roof of the building's one-story garage.

Levi's design expands the urbanistic potential of 29 Garden, too. The building fronts Arsenal Square, a small green space where







The single-student studio units (above left) have built-in shelves and concealed lighting. Large double studios (above right) feature built-in dining tables and dual refrigerators. The dining commons (left) provides multifunctioning space that can be used for eating, studying, or seminars.



1. *One-person studio*
2. *Double studio*
3. *Three-bedroom apartment*
4. *Two-bedroom apartment*
5. *Lobby*
6. *Large double studio*

two major streets converge, just beyond Harvard Square. The architect saw this as "a significant urban moment" that demanded an architectural response. In the middle of the Garden Street facade, the architect cut a three-story entryway into the volume of the building; from here, residents can access the ground-floor lobby or ascend a grand stair to the garden. If the gesture is monumental, the materials are modern: The garden entry is a glass curtain wall, and the side walls are clad in metal panels offset to create a sculptural pattern. With this architectural move, the architect transformed a nondescript facade into a graceful and elegant civic presence.

Commentary

At 29 Garden Street, Levi and his associates have programmed and designed a residence that fits the transitional nature of graduate student life, that time between the college dorm and the first mortgage. And in reinvigorating a tired and dreary building, they have produced a place that respects its historic Cambridge context while avoiding any banal imitation of older motifs. At a university that has lately seemed to favor a dull neotraditionalist approach to architecture, 29 Garden is an exemplary blend of old and new. ■





The main stair (near left) connects the first-floor lobby (far left) with the second-floor lobby and main corridors. Windows in the ground-floor lobby (below) look into the dining commons.



Olympic College Poulsbo
Poulsbo, Washington

3

MILLER/HULL INTERPRETED SCANDINAVIAN STYLE FOR A COMMUNITY COLLEGE SERVING A REGION THAT'S GROWING QUICKLY FROM RURAL TO URBAN.

By James S. Russell, AIA

Project: *Olympic College Poulsbo, Poulsbo, Washington*
Architect: *Miller/Hull Partnership—Craig Curtis, AIA, Scott Wolf, AIA, Bill Franklin, AIA, Norm Strong, FAIA, Rob Hutchison, Amy DeDominicis, Ruth Coates, Daniel Mihalyo, Annie Han, Laurie Fanger*
Engineers: *AKB Eningeers (structural, civil); Sparling (electrical); The Greenbush Group (mechanical)*
Consultants: *Edaw/Site Workshop (landscape); Sparling (lighting); The Greenbush Group (audio/visual)*

Size: *40,000 square feet*
Cost: *$8.6 million*
Completion date: *Spring 2004*

Sources
Masonry: *Mutual Materials*
Curtain wall: *EFCO*
Metal roofing: *AEP Span*
Windows: *Quantum (wood); EFCO (metal); PPG, Milgard, Pilkington (glass); Evergreen House (skylights)*
Cabinets and millwork: *W.W. Wells*
Flooring: *Dex-O-Tex (epoxy); Dal-Tile (tile); Armstrong (resilient); Blueridge (carpet)*
Marine-grade exterior stain: *Sherwin Williams*

For more information on this project, go to Projects at **www.architecturalrecord.com**.





PHOTOGRAPHY: © NIC LEHOUX

One building at 40,000 square feet comprises the entirety of Olympic College's new branch. Such a small facility makes sense in a largely rural area that's quickly growing urban, with commuters hustling along the tree-lined highways to nearby military facilities or rushing to catch ferries to jobs in Seattle, a few miles across Puget Sound.

Kelly Woodward, the director of Olympic College Poulsbo, explained that the main Bremerton campus was not only inconvenient to reach, but it was densely built out, with little room to expand. With the new structure, she added, the school can serve students who would otherwise have to make laborious commutes to facilities elsewhere.

Program

The building offers conventional two-year degrees, adult continuing education, and distance learning in a combination of 14 classrooms, seminar rooms, and labs. It needed to adapt readily to changes in curriculum proposed by an ongoing local Workforce Advisory Committee.

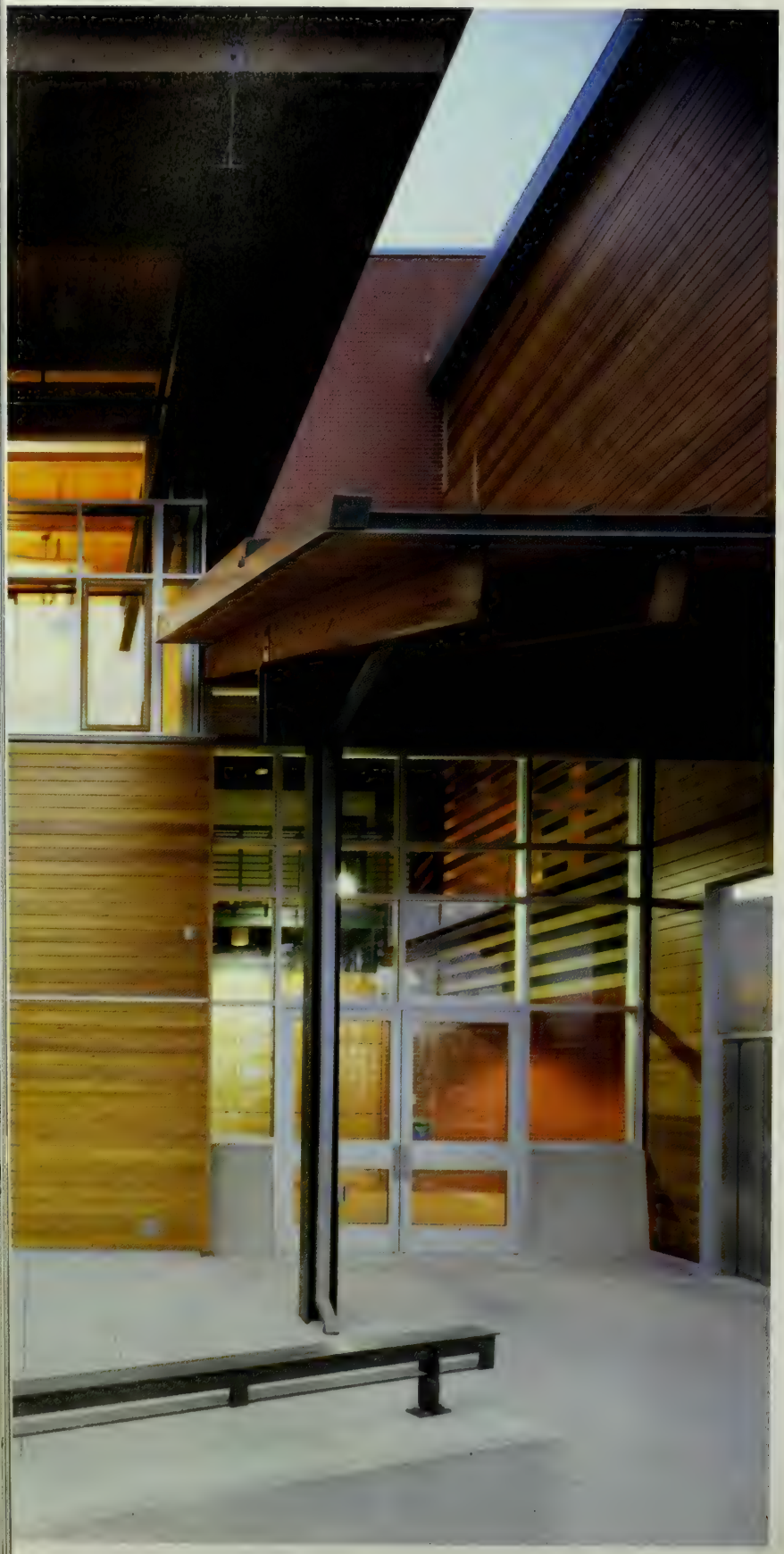
An overstretched state funding system put Olympic College in a bind. Seattle-based architect Miller/Hull started planning for the project in 1996. (It had just completed another small branch of the same college, in Shelton, 40 miles to the south [RECORD, November 1996, page 90], which went on to win a national AIA award.) The college secured state aid for the Poulsbo campus after a local developer donated 20 acres of a 220-acre commercial tract. A local gift also signaled the community's commitment to the project.

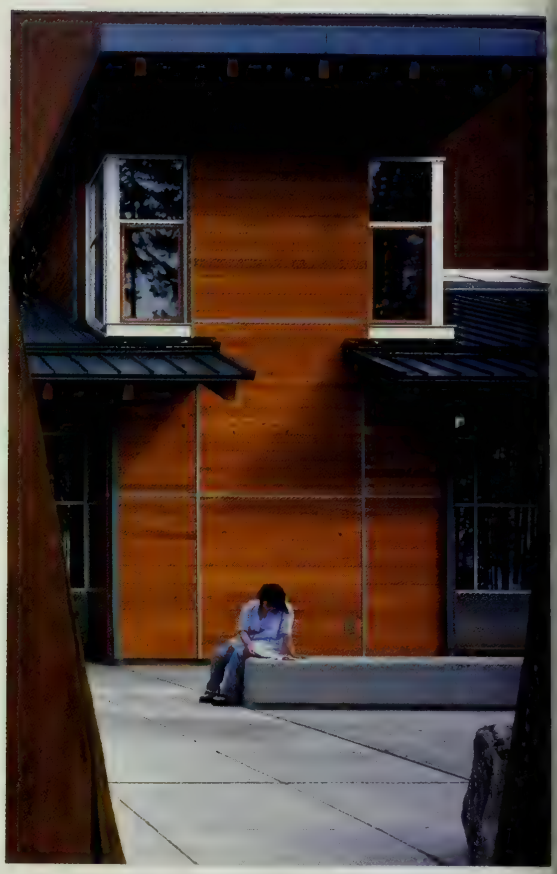
The highway-oriented commercial development raised local ire,





A broad porch faces the auto drop-off (opposite, left). From lower-level parking, a stair tower beckons like a campanile (below and top left). Shedlike structures enclose spaces to meet and relax (top right).





Judiciously bringing the exterior stained wood into the public areas (left, entrance from south-facing plaza, above) enhances the experience even within the tight $215-per-square-foot budget (which included extensive site infrastructure).

however. Opponents claimed it (and especially a planned Wal-Mart) threatened Poulsbo's center, which locals have lovingly nurtured by affixing a faux version of Scandinavian style to ordinary storefronts. The development row remains unsettled, but the college finally opened earlier this year.

Solution

The donated site, unfortunately, offered only one amenity, its shaggy cover of second-growth firs. So Miller/Hull tucked the classroom building tightly to the side of the site that faced a protected woodland.

Partner Craig Curtis, who lives nearby, says the firm welcomed the chance to work with a community that was "both active and vocal." In the program, a requirement to recognize the town's Scandinavian roots was spelled out. It was challenging, Curtis admitted, to help people understand that Scandinavia's design heritage is Modern, not just vernacular-style carpentry. "We showed them that it wasn't neces-

bby opens to
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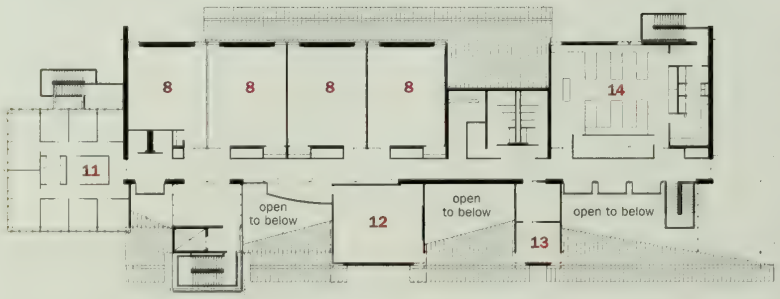




The glass-enclosed main stair (left) offers a nighttime beacon and encourages students to use stairs, not the elevator. The computer lab (opposite, top) is the academic heart of the building, since writing labs and distance-learning classrooms open directly into it (plans, below). Second-floor lounge alcoves (opposite, bottom left) and the double-height commons (opposite, bottom right) are appealing places to gather.



SECTION A-A



SECOND FLOOR



FIRST FLOOR

1. *Lobby*
2. *Auditorium*
3. *Writing lab*
4. *Computer lab*
5. *Distance learning*
6. *Receiving*
7. *Lounge*
8. *Classroom*
9. *Food service*
10. *Commons*
11. *Office*
12. *Seminar*
13. *Director*
14. *Science lab*

sarily the images, but the handling of light and the climate, which are very similar."

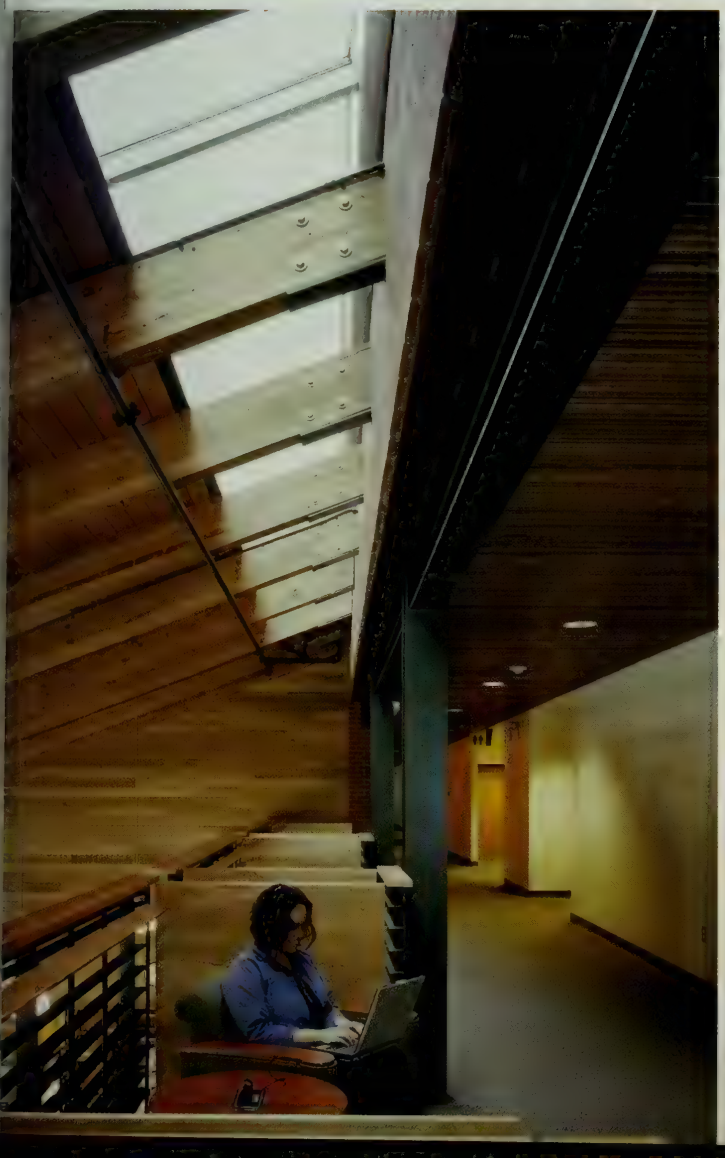
Curtis's team packed classrooms tightly against each other on the north side. Shedlike volumes with clerestories and high window walls open to the south to grab low winter light. They shelter quiet places to study and eddies of space for socializing in the simple, double-loaded corridor plan. The lobby and the porched commons are double-height gathering spaces that bookend the structure. A long plaza, like an external corridor, parallels the building. The sense of spatial generosity doesn't just add visual appeal; the opportunities to see and be seen ease the social isolation common to colleges with mainly part-time students.

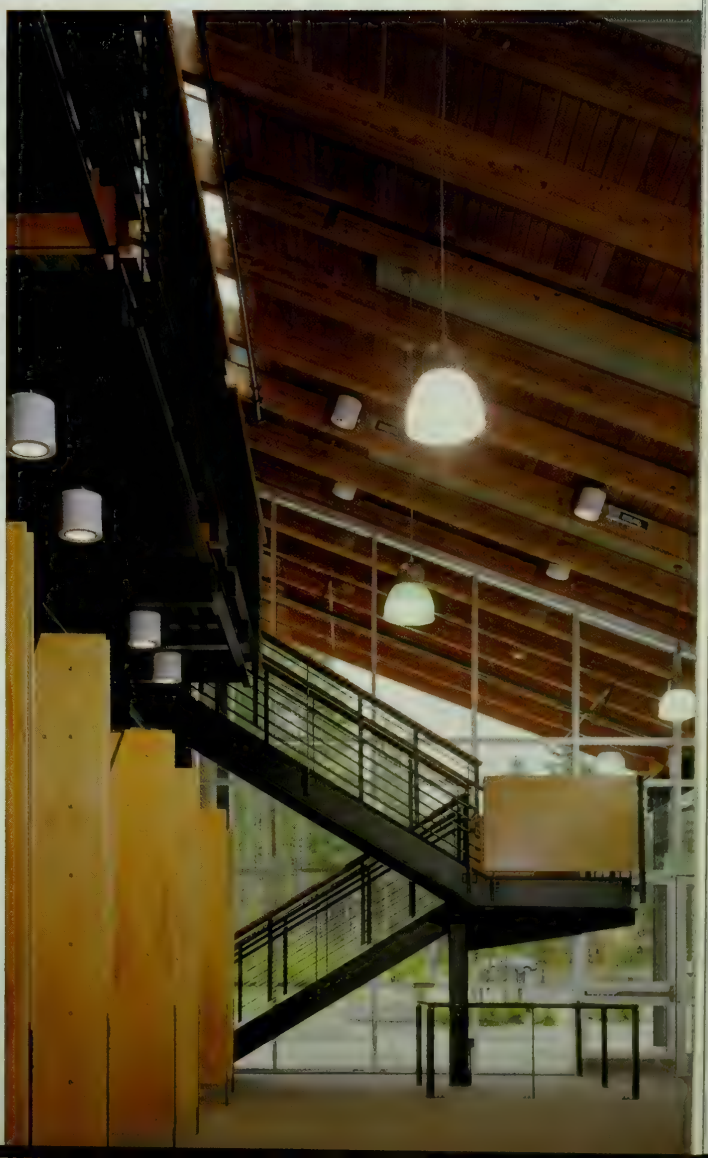
Commentary

The focus on easy sociability is important for a structure that operates day and evening to serve both adult-education and degree-earning programs. Many students take courses both in Poulsbo and Bremerton, but director Woodward says students can complete several programs, including nursing and office technology, entirely within the building already. It attracts 350 full-time-equivalent students. (Capacity is 800.) "Our Workforce Advisory Committee has recommended changes in the curriculum, like the addition of culinary arts," says Woodward. "We can accommodate this because of the flexibility of the classrooms."

The architect was constrained by the unfortunate site. It is well away from the main road and invisible to passersby, so there was no opportunity to develop a civic image for a campus that will probably grow. The developer that donated the site also unwisely scraped clean its 200 acres, creating an appalling eyesore. It is not surprising that activists have kept development from materializing. Luckily for Olympic College, the fast-growing local flora should quickly obscure whatever gets built next door. ■







Swarthmore College Unified Science Center

Swarthmore, Pennsylvania

4 **EINHORN YAFFEE PRESCOTT AND HELFAND ARCHITECTURE SMOOTHLY INTEGRATE MODERNIST FORMS WITH TRADITIONAL MATERIALS.**

By Suzanne Stephens

Architect: *Einhorn Yaffee Prescott (EYP) and Helfand Architecture (HA; formerly Helfand Myerberg Guggenheimer), architects in association—Cahal Stephens, AIA (EYP), principal in charge; Margaret Helfand, FAIA (HA), design principal; Kip Ellis (EYP) project manager; Jennifer Tulley Stevenson, John Tinmouth (HA), Lila Khalvati, AIA (EYP), project architects; Yelena Lembersky, AIA, Jay Hallinan, AIA, Nikolas Dando-Haenisch, AIA (EYP), Elisa Testa, Tom Chang (HA), design team*
Client: *Swarthmore College—Lawrence Schall, vice president for administration; Janet Semler, director of planning and construction; Rachel Ann Merz, planning committee*
Engineers: *Christakis VanOcker Morrison (structural); Einhorn Yaffee Prescott (m/e); Robert W. Sullivan (plumbing)*
Landcape design: *Gladnick Wright Salameda; ML Baird & Co.*

Size: *69,000 square feet (renovation); 75,000 square feet (new construction)*
Cost: *$48.2 million*
Completion date: *Summer 2004*

Sources
Ashlar stone: *Wissahickon schist*
Metal and glass curtain wall: *Kawneer*
Aluminum windows: *Wausau*
Glazing: *Pilkington*

For more information on this project, go to Projects at **www.architecturalrecord.com**.

In renovating and adding onto an existing science facility, Swarthmore College faced an old dilemma. The college wanted to create a contemporary architectural response befitting an evolving program, yet not jeopardize the cohesion and spirit of the campus's historic architecture. Located on the edge of a 200-acre woods, the college, founded in 1864 by the Hicksite Quakers—the more liberal branch of the Society of Friends—was, and still is, coeducational and fiercely intellectual. "Architecture is vitally important in expressing this tradition as well as inspiring imagination and creativity," says its president, Alfred Bloom.

The campus displays its fair share of architectural styles, including the central building, Parrish Hall, a Second Empire–style, mansard-roof affair dating to 1881, plus superbly iconic examples of Collegiate Gothic buildings by Karcher and Smith, such as Clothier Hall, designed in 1929, and Worth Hall, a dormitory built in 1924. Although Swarthmore's architecture has taken on a variegated look over the years, the campus buildings are unified by the pervasive use of local stones, most notably Wissahickon schist, glinting of silver and gold mica. Yet the DuPont Science Center, designed by Vincent Kling in 1958, egregiously diverged from the campus mien. The Modern rectilinear center, clad in a yellow-tan precast-concrete aggregate panel, has always struck a jarringly



PHOTOGRAPHY: © JEFF GOLDBERG/ESTO





In keeping with the college's stone buildings, the architects clad new spaces in the local Wissahickon schist, alternating it with granite (this panel). V-shaped roofs are sheathed in terne-coated stainless steel (below). Ceramic fritted glass creates a partly gauzy curtain wall (below center).

tacky note. Fortunately, it needed to be updated and expanded.

Program

For economic reasons, the college wanted to keep most (69,000 square feet) of DuPont, adding 75,000 square feet of new construction for science classrooms, laboratories, offices, and a student commons. The new addition would also link physically to an adjacent library, along with Martin Hall, a handsome, Moderne-style stone biology building, designed in 1937 by Cram and Ferguson.

The college first brought in Einhorn Yaffee and Prescott (EYP) of Boston to program the spaces. As Larry Schall, vice president of administration at Swarthmore explains, the school was impressed by the architecture and engineering firm's previous work on large science buildings at other college campuses. But Swarthmore also valued the design sensibilities of Margaret Helfand, FAIA, of Helfand Architecture (HA; formerly Helfand Myerberg Guggenheimer), who in 1996 had designed the Modernist stone-clad Kohlberg Hall [RECORD, February 1997, page 70]. "Helfand's design talents and our experience in working with her before proved so successful, it made us want to do that again," says Schall. So the college (Schall, Bloom, and the Science Center Planning Committee) proposed an arranged marriage between the two firms for the job. Cahal Stephens, AIA, of EYP would be the principal in charge, and Helfand the design principal.

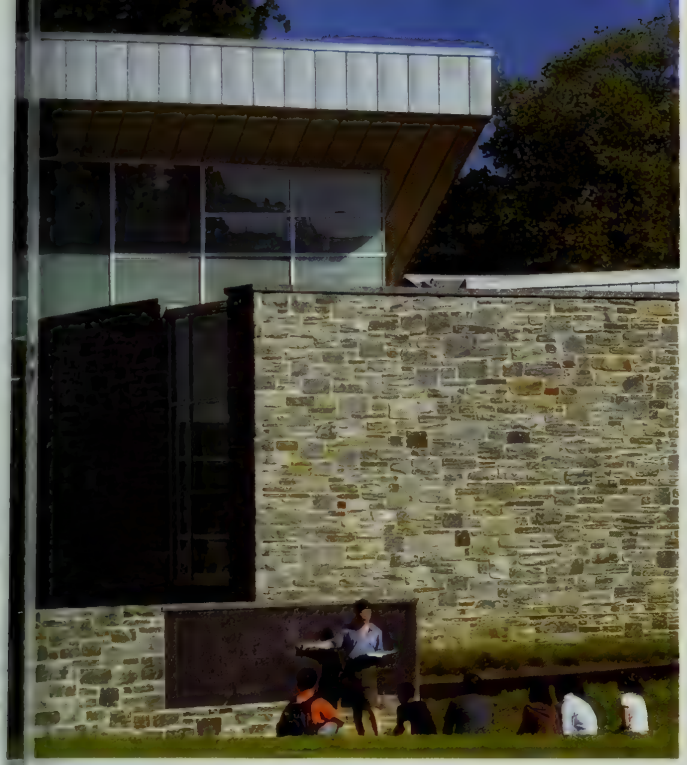


SITE/FLOOR PLAN

Solution

The architectural team decided to place the new additions to the science center along the eastern and southern edges of the renovated buildings, where they would create an outdoor courtyard, with the Kling structure forming the rear backdrop. A second outdoor court carved out of the slope to the west allows daylight to be admitted into physics laboratories placed under the student commons. Two V-shaped, terne-coated stainless-steel roofs, essentially rectangles folded on a diagonal, define indoor and outdoor areas through their projecting cantilevers. Although the existing Kling building's precast-concrete aggregate panels and its poured-in-place concrete frame would remain, the architects installed a new, sleek glass curtain wall at its base, and fully revamped the interiors. In addition, new steel-framed blocks for laboratories, auditoriums, and classrooms, clad in glass, aluminum, and stone, are cranked slightly so that their front elevations become a series of inflected planes: "This was to foster a path of movement from the parking lot—the new primary visitor entrance—on the east down to the center of the campus on the south," says Helfand.

Inside and out, HA combined vibrantly natural materials—the Wissahickon schist in an ashlar (squared) pattern, black and gray granite, cherry wood, and slate—to great effect. Details diverge from the usual fast-and-cheap school specifications; for example, granite lines the window sills indoors and provides brise-soleils outside. "These are cost effective and low maintenance," states Helfand. The stairs have slate treads and blasted-stainless-steel banisters, while sintered aluminum fiber over perforated masonite provides acoustical surfaces inside classrooms and auditoriums. To dramatically shape the indoor space of the commons, the social heart of the science center, the architects designed a glue-laminated timber-truss roof that cantilevers from poured-in-place concrete piers and wood columns. The furnishings in this meeting place appear comfortably noninstitutional, with chairs by Dakota Jackson and Cassina, and

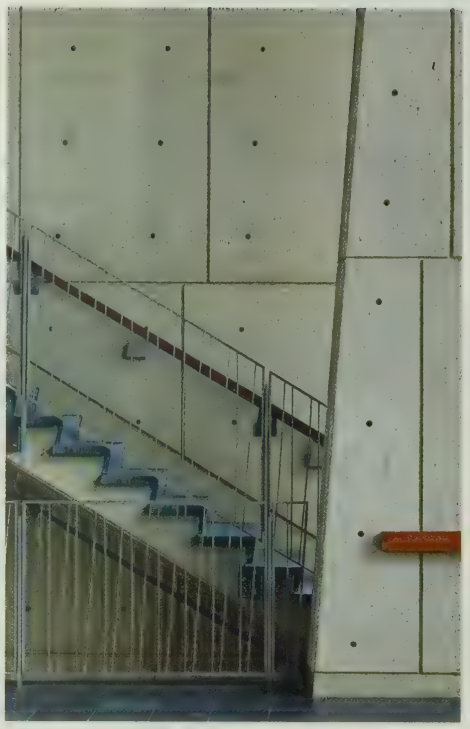


Honed black granite is used as outdoor chalkboards for science classes (left); a lighter granite clads the new chemistry wing on the eastern end of the complex (below), articulated by granite brise-soleils. The entrance canopy (bottom) frames a courtyard edged at the rear by the renovated science buildings.









Fritted glass keeps birds from crashing into the panes (above). The student commons (below and opposite) is dynamically charged by a ceiling with a glue-laminated wood truss (below), one leg of which extends 41 feet 4 inches, cantilevered from concrete piers. Slate covers the commons floor and the treads for the stairs inside and outside (right).



solid cherry tables by Ted Boerner.

Elsewhere, HA combined durability and comfort with high design in its conversational groupings and niches for studying and socializing, while EYP attended to creating crisp state-of-the-art laboratories and classrooms. Corridors may often end in inglenooklike alcoves with built-in high-backed cherry wood benches. The professors' offices come with small conference areas lined with walls of slate for chalkboard discussions. The effect is pure Cy Twombly.

Since both the college and the architects were interested in sustainability, the team went after a silver LEED rating. Accordingly, the architects specified products for wood ceilings and walls, as well as carpets and tile, that are derived from recycled materials. Operable windows, local temperature controls, and single-loaded corridors make the most of natural light and ventilation. To deter birds from crashing into the glass, the architects consulted an ornithologist. The result: Gauzy screenlike panes of ceramic fritted glass alternate with clear glass to signal a "no flying zone" to the birds.

Commentary

The architects' handsomely detailed synthesis of Modernist forms and traditional materials for this complex of buildings brings to mind Louis Kahn's houses in the area, from the Oser House in Elkins Park (1942) to the Fisher House in Hatboro (1967). Although the south elevation for the grouping of buildings appears more stretched out horizontally and episodic than the tightly composed forms of other stone buildings on the campus, it does a good job of concealing, or at least mitigating, the sore-thumb aspect of the precast-concrete aggregate panels of the 1958 building. The Unified Science Center is aptly named in its use of clean geometrical forms and its interrelation of the outdoor and indoor spaces, particularly in such a sylvan setting. More important, it offers meticulously elegant places in which to study, work, or socialize. ■



Santa Monica College Library

Santa Monica, California

5

ANSHEN+ALLEN LOS ANGELES RENOVATES AND EXPANDS AN OUTDATED LIBRARY, DOUBLING SPACE AND CREATING A CAMPUS SOCIAL CENTER.

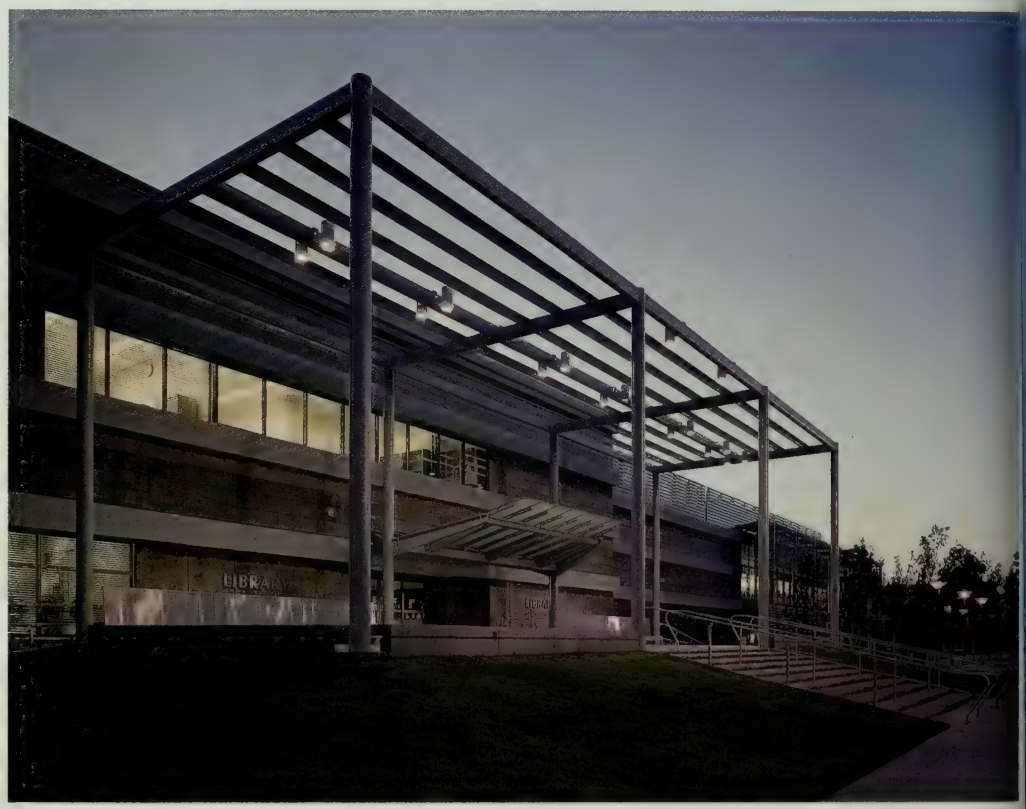
By Morris Newman

Architect: *Anshen+Allen Los Angeles—L. Paul Zajfen, design principal; Andrew Labov, project architect; Fabian Kremkus, Edward Anastas, Claudia Larrain, Ramon Klein, Candace Taira, David Consbruck, project team*
Client: *Santa Monica College District*
Consultants: *Arup (structural/mechanical/electrical engineering, telecommunications, acoustic); Ashba Engineers (civil); Linda Demmers (library programming); Katherine Spitz Associates (landscape architect); CNI Design (interior design); Carol Cambianica (furnishings); ILD (lighting); Tait Solar (solar design); FHT (hardware)*
General contractor: *Nielson Dillingham Builders—C.W. Driver*

Size: *54,000 square feet (renovation); 41,000 square feet (expansion)*
Cost: *$21.95 million (construction)*
Completion date: *September 2003*

Sources
Curtain wall, windows: *Werner Systems*
Skylights: *Supersky*
Doors: *Horton Automatic; Mohawk*
Hardware: *Schlage; Rixon; Von Duprin*
Acoustical ceiling: *Armstrong*
Shades: *MechoShade*

For more information on this project, go to Projects at **www.architecturalrecord.com.**



For decades, the Santa Monica College Library seemed like a missed opportunity. Though sited on the main pedestrian mall, the massive, windowless concrete structure took little advantage of its strategic position to create a social center on campus. After a recent renovation and expansion by Anshen+Allen Los Angeles, the 1970s building has been reconfigured as an inviting information center and student gathering place. While the size of the facility has doubled, it has been seismically strengthened after damage suffered in the 1994 Northridge earthquake. Newly centralized, upgraded electronic systems and learning centers are now showcase elements of the college's information technology master plan.

Morris Newman is a writer based in Los Angeles.

Program

The existing library was dark, noisy, outdated for computer use, and far too small for the 28,000 students enrolled in this two-year community college. "We were finding students sitting on the floor around the elevator because there was no other place to study," says Mona Martin, assistant dean of learning resources. Overcrowding got worse because the building was one of the few places

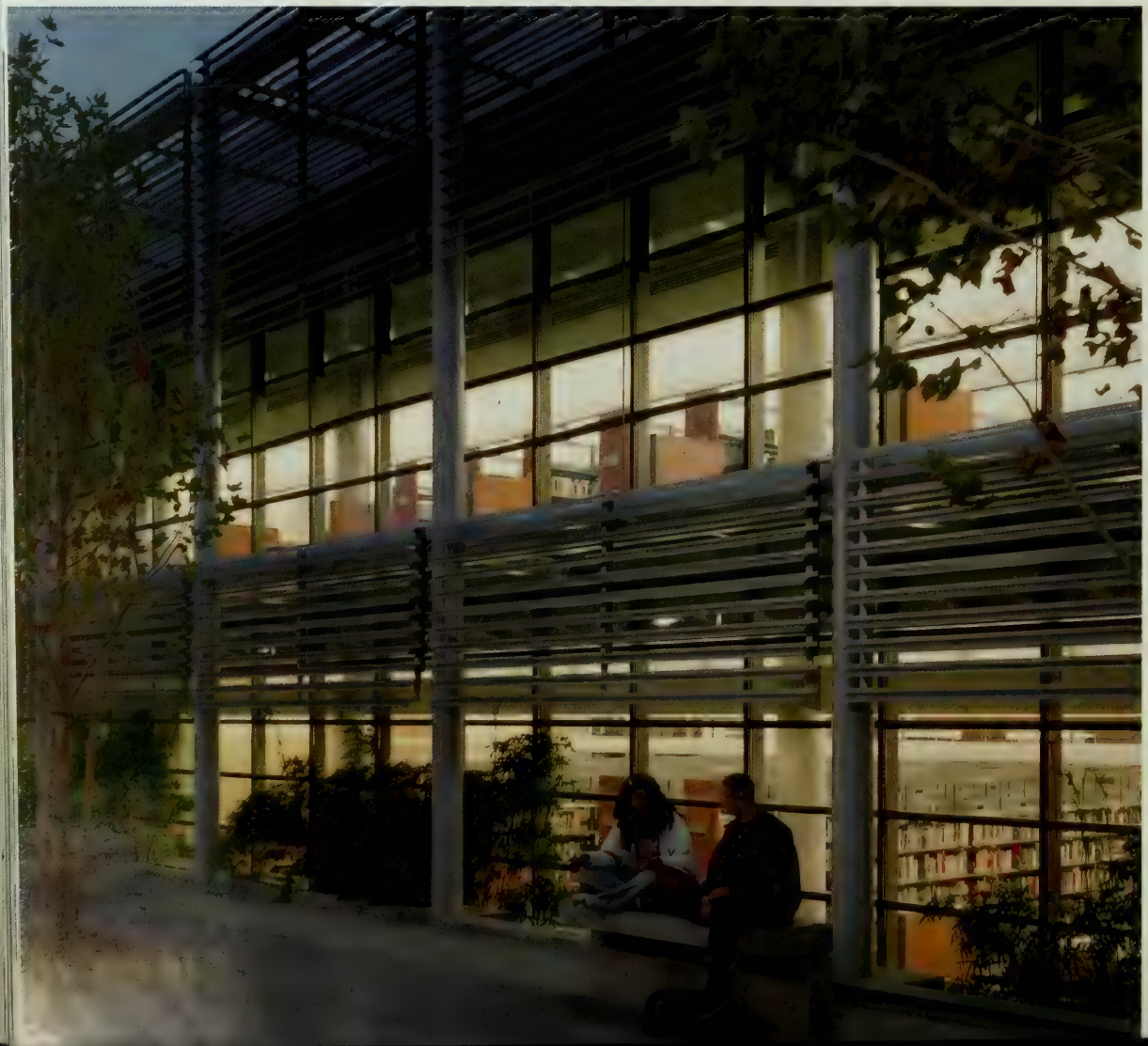
› Brutalist appearance
the original windowless
rary has been trans-
med with extensive
zing that fronts a main
destrian mall (right
d below). Exterior
nscreens provide par-
l shade for interior
aces. A new cagelike
ont porch" with seating
courages social inter-
tion at the library's
trance (opposite).











On the south elevation (top right), fixed vertical louvers made of extruded aluminum provide sun control for a new central core. In similar fashion, horizontal louvers along the glazed addition (left) minimize striated shadows falling on book stacks. The "front porch" visually unifies the addition with the existing structure (top left). The exploded axonometric view and floor plans (opposite) illustrate the library's new islandlike core for computer-based work.

the 23-acre campus where stu-
nts could meet to collaborate on
jects.

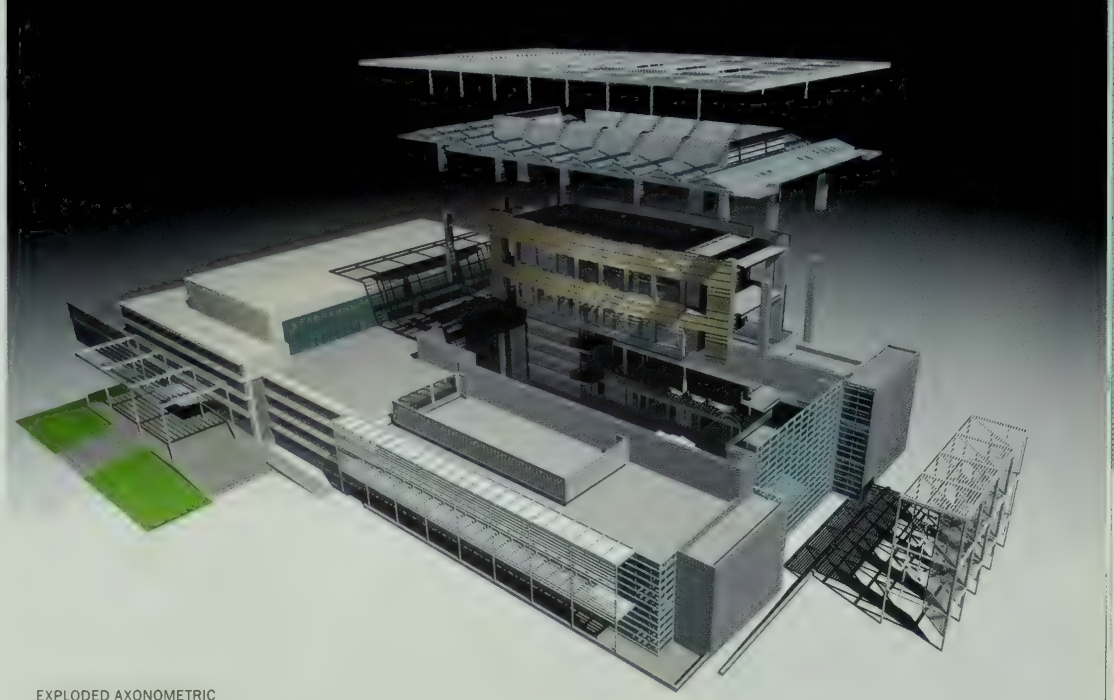
lution

open up the building, the archi-
ts added a new glass wing,
ximizing daylighting while provid-
sun control. To accommodate
need for computer-based library
earch, the architects devised
islandlike building-within-the-
lding that concentrates cabling
d mechanical services beneath
aised floor. And drawing on the
library's setting as a popular
thering hub, the architects went
yond the technical requirements
the interior program to enhance
social quality of the entrance
h outdoor seating and a height-
ed presence on the mall.

Although the existing library
is undistinguished, project archi-
t Paul Zajfen decided not to
atly alter the facade of the
,000-square-foot structure. A
nopy was added above the
trance to aid wayfinding. A four-
sterlike cage structure outlines
"front porch," provides overhead
hting, and partially masks the
nt elevation.

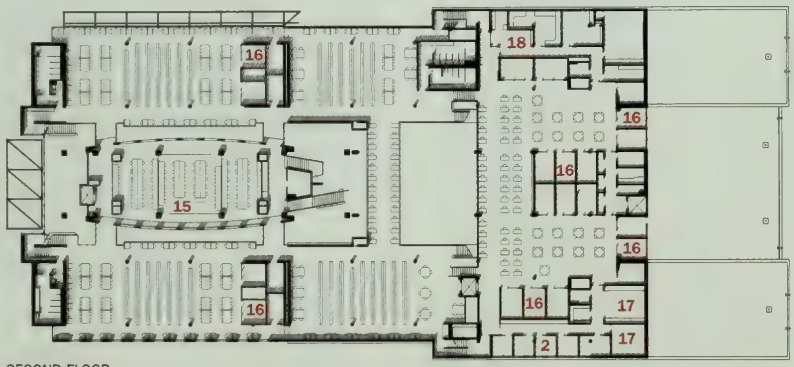
The new addition is a largely
ss structure that opens the library
the mall, allowing passersby to
e inside and casting a glow from
thin at night. Initially, the addition
as conceived as a glass box
tached to the concrete mass.
equirements for shear walls and
e need to screen the interiors
m sunlight led to changes in the
iginal design. The west elevation
came a poured-in-place-concrete
all with minimal punched windows
at protect the building from the
ternoon sun. Embracing a strategy
passive sun control, the front
evation is now shaded by external
uvers. The south elevation is
otected with three fixed vertical
uvers that are two stories in
ight and made of extruded alu-
inum channels.

With a budget of only $23 mil-
on, the architects reserved most of
heir firepower for the interior, where
hey provided new lighting and a

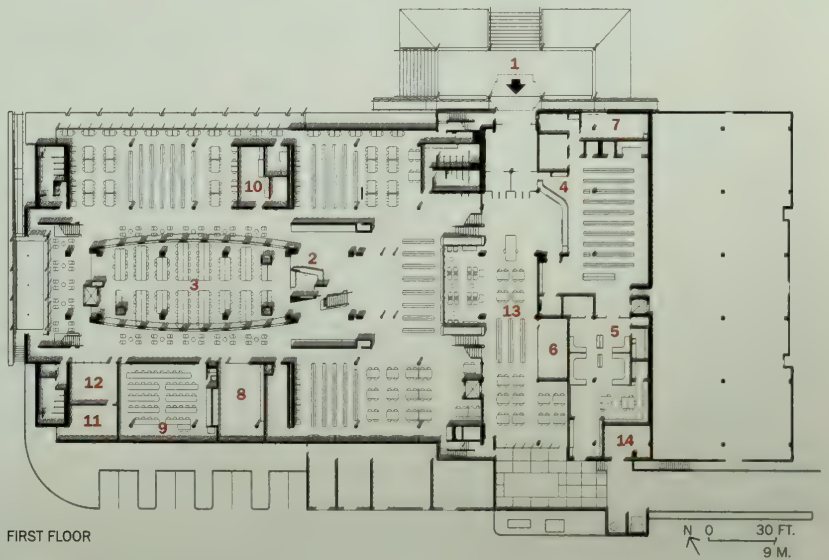


EXPLODED AXONOMETRIC

1. *Entry*
2. *Reference librarians*
3. *Reference*
4. *Circulation desk*
5. *Technical services*
6. *Copy room*
7. *Staff lounge*
8. *Electronic services*
9. *Bibliographic instruction*
10. *Reference photography*
11. *Systems room*
12. *Curriculum development*
13. *Periodicals*
14. *Mechanical*
15. *Audiovisual workstations*
16. *Group study*
17. *Workrooms*
18. *Offices*



SECOND FLOOR

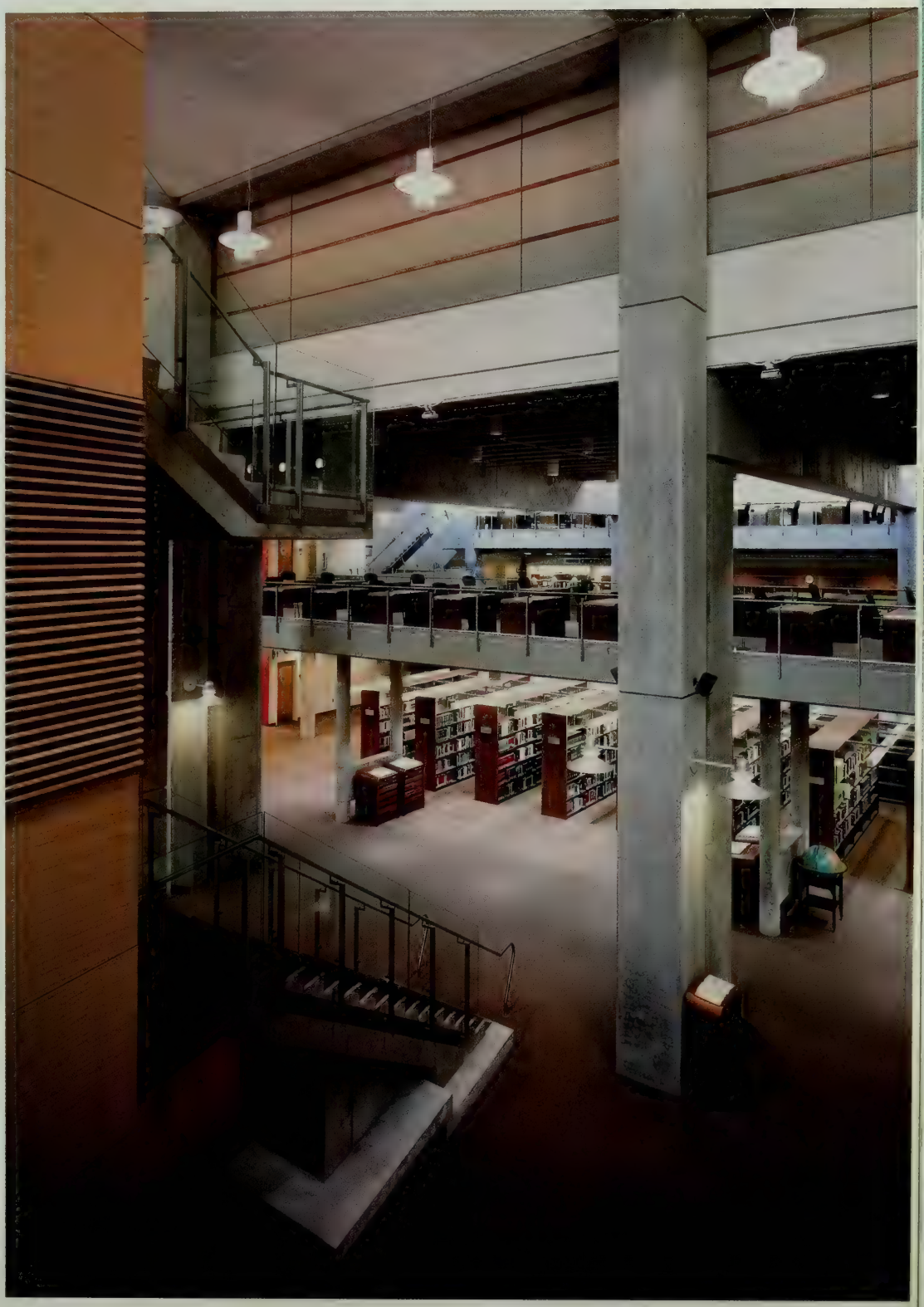


FIRST FLOOR


LEVEL 1 NORTH



A three-story, skylit atrium brings daylight into the center of the library and the surrounding seating areas (opposite and left). The expanded and easy-to-access book stacks can store 145,000 volumes (below).



ɔpped ceiling in the existing wing control noise. A raceway of mmunications wiring for laptop mputers is hidden in a hanging ht fixture that runs along the ter aisles of the building. Stacks ıd reading areas are located in o parallel wings that extend the ucture's axial organization.

The computer commons, a ree-level, freestanding unit within e new wing, contains a computer assroom, a reference facility, and ug-in study desks. Separating the ɔmputer floors, says Zajfen, pro-ides a strong visual symbol for formation technology within the ırary, while keeping the clicking keyboards away from the rest of e interior. Housed in curving walls oak and glass, the computer core as been nicknamed "the boat" by udents. The boat indeed seems to oat by itself, separated from sur-ıunding floors by a 4-foot reveal ıat opens lower floors to daylight-g while providing visitors with sual transparency from floor to oor. Structurally, the boat has its wn seismically separate founda-on and is supported by a concrete ıoment frame.



A wood-clad core structure was inserted in the original volume (right and below). It centralizes information technology systems, housing a computer commons, enclosed multimedia lab, and plug-in workstations.



Zajfen had proposed a row of rooftop brise-soleils for lighting throughout the new wing, but discussions with the client resulted in a series of individual skylights with punched openings. This compromise does not take away from the impressiveness of the ceiling section of the wing's south-facing hallway, where the wall reaches up 42 feet to the skylights and then immediately swoops down to provide intimate overhead lighting for study carrels.

Commentary

Students have embraced the enlarged library, with about 7,500 people, or roughly a quarter of the student body, using the building daily. The existing seating has doubled, while the library provides 19 new conference rooms for collaborative student work, plus a larger meeting room that is popular for faculty gatherings. Outside, new built-in seating near the entrance has cemented the role of the library as the social center of the college. A recent master plan proposes a new main road through the campus terminating at the library's south elevation. The success of the building seems confirmed by the ownership expressed by students, according to Martin, who reports that "every student seems to have identified his or her favorite place." ■

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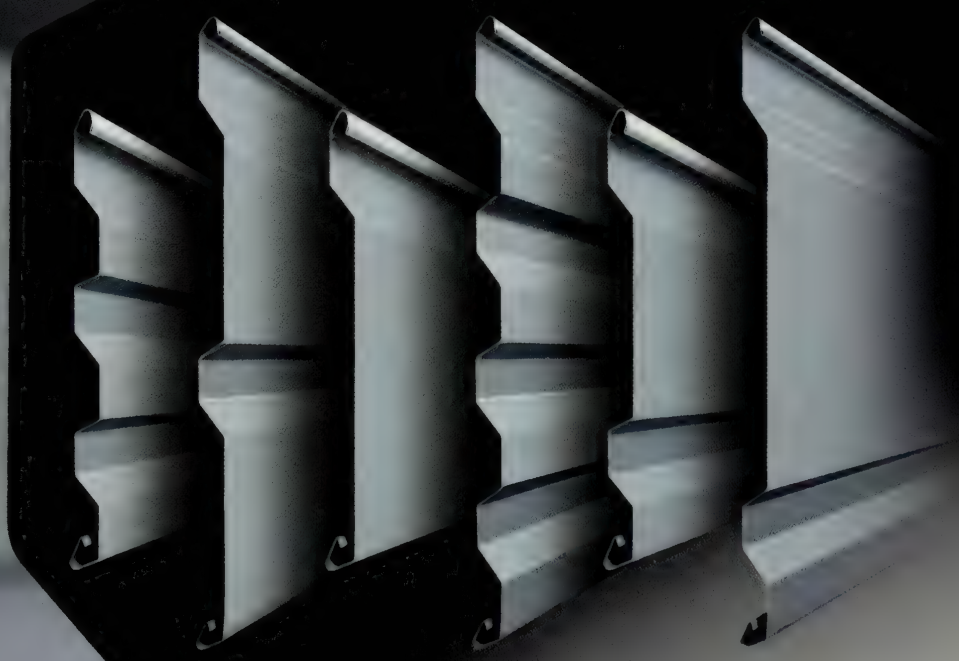
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Architectural Technology

Keeping up with the latest materials has become a full-time job, and several groups are now doing it

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A pedestrian bridge in London makes waves by rolling out of the way (230).



In Angola's capital, an eco-efficient campus takes shape (226).

Traditional building materials and finishes will always have their place, but it's not just a concrete, steel, and glass world anymore. Material science has rocketed forward in the past decade, and manufacturers are developing new products at such a rapid pace that keeping abreast of the latest information has become an uphill battle for many of our readers. This month's continuing-education feature helps alleviate the burden of research by identifying a handful of enterprising individuals and organizations who make it their business to collect, investigate, or publish information about new materials and products for buildings. Even the mighty engineering firm Arup has recently spun off its own materials-consulting practice, and it's not unlikely that experts like these will become integral members of project teams in the future.

In talking to these entrepreneurs and researchers, we learned again how green building is driving innovation in design. Our second feature addresses sustainability for a different and often-overlooked material in buildings—wiring. A story on this topic in *Environmental Building News* by its executive editor Alex Wilson caught our attention earlier this year, and we're sharing much of this valuable information with you here. Wilson's story illuminates the complex processes of making, installing, and removing wiring from buildings, and highlights environmental and health issues surrounding its manufacture and use.

Finally, we examine the science behind the design of two recently completed projects that have a lot of kinetic energy: a lift for vintage cars that's a sleek machine in its own right, and a footbridge that curls up on itself to make way for nautical traffic. Aside from being good examples of the advantages of architect-engineer collaborations, they're just plain fun. Take a look.

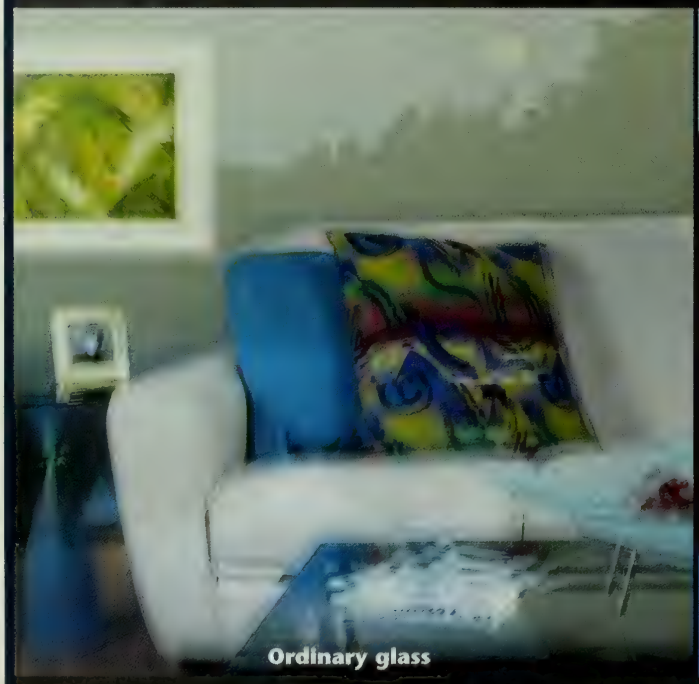
Deborah Snoonian, P.E.

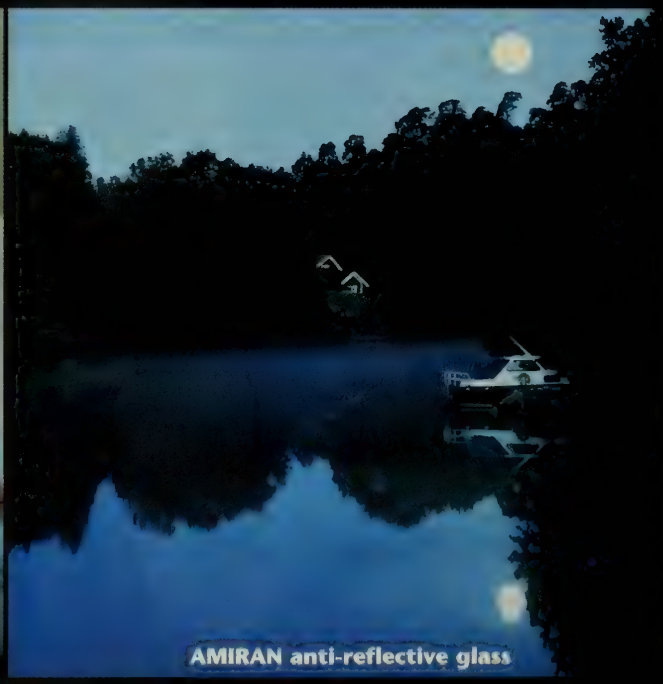


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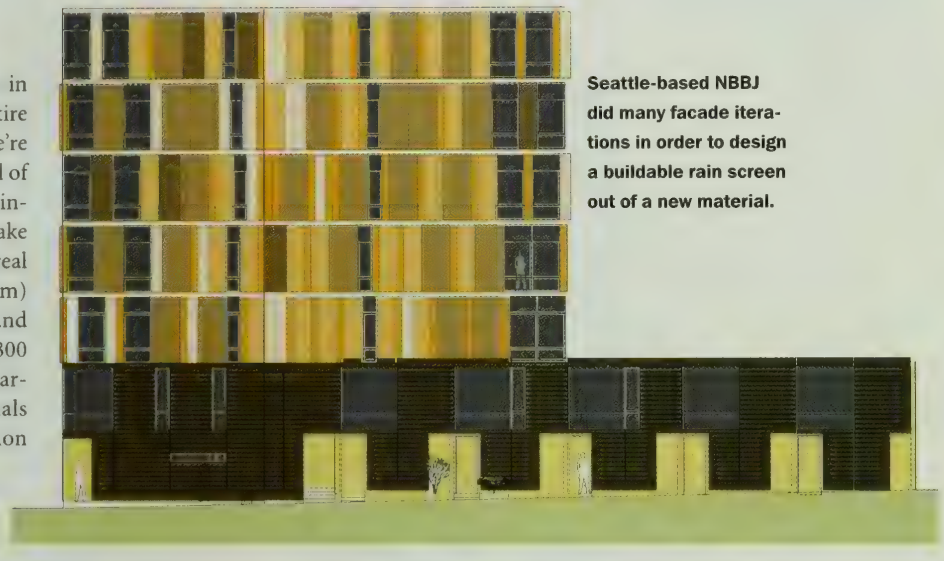
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Entrepreneurial Curators Seek Innovations

A COTTAGE INDUSTRY IS EMERGING TO COLLECT, EVALUATE, AND PROPEL INNOVATIVE BUILDING MATERIALS AND TECHNOLOGIES FROM DRAWING BOARDS TO CONSTRUCTION SITES

By Sara Hart

More products have been invented in the past 15 years than in the entire prior history of architecture. We're only beginning to tap the potential of those materials," says Stephen Kieran, FAIA, principal of Philadelphia-based KieranTimberlake Architects. There's very little data to confirm real numbers, but *Sweets* (sweets.construction.com) currently tracks 61,000 building products, and *Greenspec* (buildinggreen.com) lists over 1,800 sustainable materials. And yet there are apparently so many new and unusual materials flooding the marketplace that the phenomenon has spawned a cottage industry of boutique libraries and subscriber services to evaluate and promote them.



Seattle-based NBBJ did many facade iterations in order to design a buildable rain screen out of a new material.

The hunters and gatherers

Materials ConneXion, started by George Beylerian in 1997 in New York, is the gold standard for collecting, evaluating, and dispensing information about new materials and manufacturing processes for a variety of industries, from architecture to toy manufacturing. Its on-site library in New York displays many items from its collection of more than 1,400 new materials samples. Its online database gives members access to a reservoir of marketing services, strategic alliances, and research, and it has recently established on-site libraries in Milan and Cologne.

And yet there are newcomers to the innovative materials market, which seems to confirm that the expanding universe of products and innovations is big enough for multiple archivists. Zach Kaplan and Keith Schacht launched Inventables in 2002. The company publishes *DesignAid*, a smart subscription service that is packed with objects and information. Every three months, subscribers receive a three-part issue—20 samples displayed in three cases, a hard-copy design guide, and access to its online database.

The Chicago-based entrepreneurs started Inventables by interviewing design professionals and compiling information about how they find and use product samples. Kaplan says they discovered that many design professionals either don't have time for research, or they do it cyclically depending on specific project needs. "We found a lot of unfinished databases and materials in cardboard boxes in a lot of offices," he explains.

Kaplan has gleaned the typical ways in which designers work with information about materials. "They often use iteration. Traditionally, this is the methodology used when trying to optimize cost. It is the repetition of a design process by calculating [different material applications] again and again, each time improving the accuracy of the result by some amount," he says. "Or they use interaction. This is sometimes referred to as *play*. By interacting with a material, by touching it or playing with a prototype or a model, they can learn things that they may not have logically deduced otherwise."

Once armed with real data and keen observations, Kaplan and Schacht assembled a panel of volunteer professional designers and engineers that now meets four times a year to establish criteria for choosing materials, which they then use to evaluate and make selections. Kaplan and Schacht share the information they gather with clients and industry experts; they scour trade shows, trade journals, and press releases, and develop relationships with manufacturers, in an effort to keep news of

CONTINUING EDUCATION

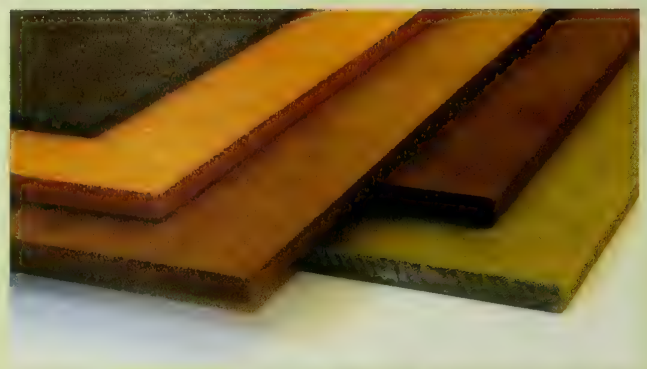
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, *turn to page 326 and follow the instructions.* *Other opportunities to receive Continuing Education credits in this issue are found on page 241.*

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe the new industry that has developed around building materials.*
2. *Explain how different companies collect information and evaluate materials.*
3. *Discuss new trends regarding building materials.*

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Materials tested for one application can work in another

NBBJ Architects sought an alternative cladding system for a 172-unit residential complex in Seattle. The hardboard panels making up the rain screen are made of layers of paper and a low-VOC phenolic binder, manufactured by Rainier Richlite (left). The isometric (opposite, top) shows how the panels (brown colored) were lapped rather than butt-jointed. The aluminum sunshades are off-the-shelf proucts. The details (opposite, bottom two) show an airspac for water vapor.



innovation flowing in multiple directions.

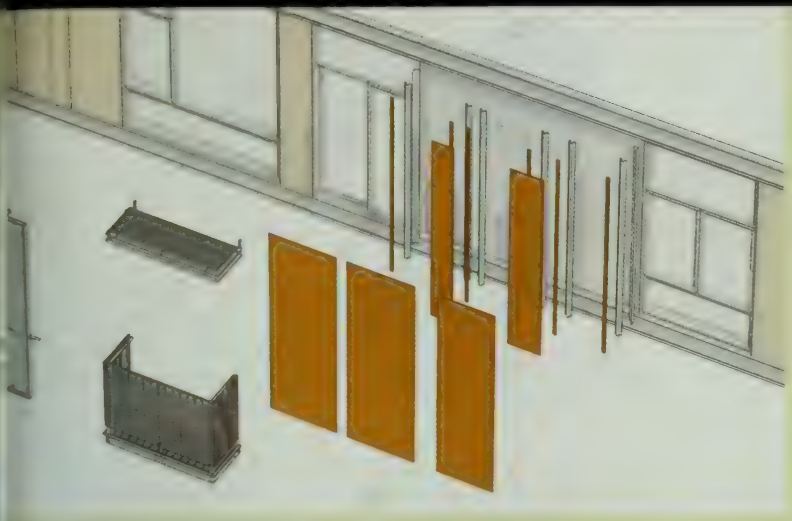
Kaplan describes their efforts as "focusing on things that make something possible that was not possible before. The intent is to find things that provide stimulus and jumping-off points for fresh ideas." An important editorial policy is that *DesignAid* does not feature incremental improvements, nor does it publish materials in research and development. "We focus on materials and technologies that are available for production. If we identify something in the research labs, we wait until it's ready before featuring it." Kaplan declines to divulge the exact number of subscribers, but he claims there are hundreds, which is promising, considering *Material ConneXion* has more than 400.

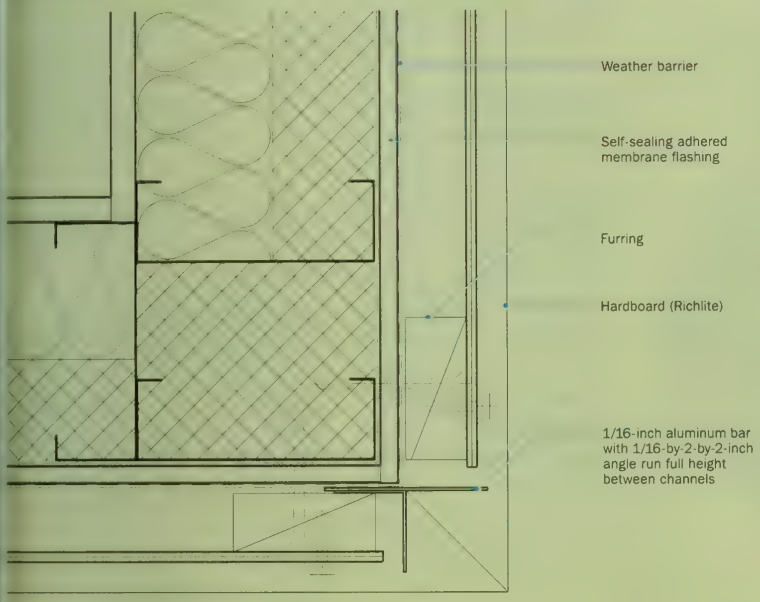
"THE INTENT IS TO FIND THINGS THAT PROVIDE STIMULUS AND JUMPING-OFF POINTS FOR FRESH IDEAS."

Whereas *DesignAid* is aimed primarily at industrial designers, New York–based Princeton Architectural Press, a publisher of architecture and design books, is developing a materials sampler, *Materials Monthly*, specifically for architects. The publisher has hired Jennifer Siegal, an architect and principal of MobileDesign in Los Angeles, to be the series editor. Her interest in innovation can be traced to her investigation into smart materials as a Loeb Fellow at Harvard and MIT, and now she teaches a seminar about smart materials at Woodbury University in Los Angeles.

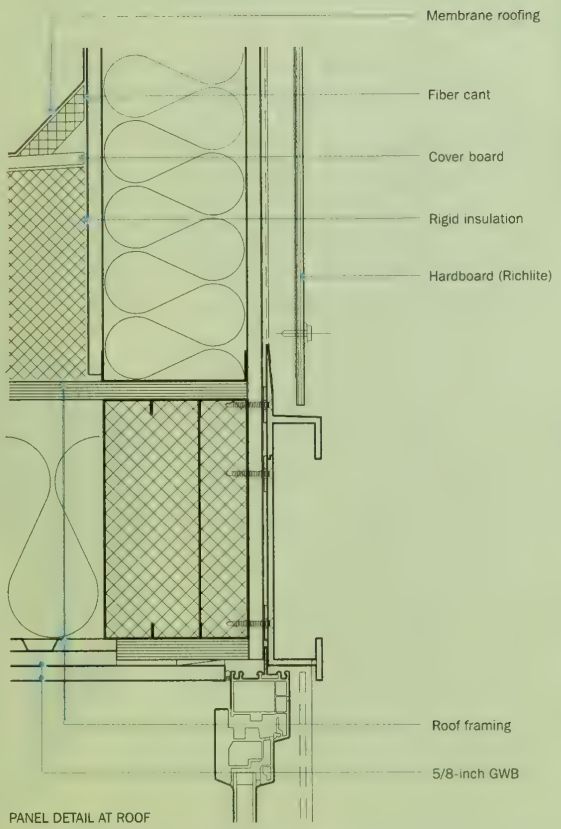
Scheduled to launch in the spring 2005, *Materials Monthly* will be a subscriber-based magazine-in-a-box, and like *DesignAid*, it will include material samples, a written guide book, and access to an online database. Rather than assemble a permanent panel to choose materials like the *DesignAid* principals, Siegal will select a guest designer to edit each themed volume.

Then there's Blaine Brownell, an architect and associate at Seattle-based NBBJ Architects, a one-man clearinghouse for the most cutting-edge materials on the market. Whereas *Material ConneXion*, *DesignAid*, and *Materials Monthly* charge subscription fees, Brownell's undertaking—Transstudio—is a not-yet-for-profit enterprise. A self-published catalog of the latest materials, *Transmaterial*, currently weighs in at 196 pages in its hard-copy version. Because it's an ever-expanding archive, Brownell invites architects to download the entire catalog as PDF files at





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no charge from his Web site. He also produces a free product-of-the-week newsletter, delivered by e-mail and added to his database. Recipients get a one-page description of a material in the same format as the catalog so that it can easily be added to the appropriate category.

Strategies and arrangements

Each enterprise adopts similar subscription models, although there are differences. *Material ConneXion* uses somewhat traditional genres—polymers, glass, ceramics, carbon-based materials, cement-based materials, metals, natural materials, and natural material derivatives. Still, the catalog receives 35 to 45 submissions of highly innovative products each month.

Kaplan and Schacht organized *DesignAid*'s material into categories—materials, mechanics, processes, electronics, and last but not least, the sexy "wow" division that gets the creative juices flowing. "Our five categories were developed for easy sorting. These were the primary categories of items that designers we interviewed look into. Also, since we only publish 20 per month, because we are being so selective, we did not want to get too specific limiting what could be in a particular category. For example, if we made a category 'glass,' it would be too narrow. We cover more than just materials."

Like *DesignAid*, Princeton Architectural Press is developing *Materials Monthly* to be a tool kit with which architects can build their own libraries. At this point in development, Siegal is using the following general system—natural materials, color-changing materials, recycled materials, pattern materials, shape-memory materials, films, plastic composites, super soy, paints and coatings, and future fabrics.

Brownell, on the other hand, delivers no samples for fondling. However, he has employed a unique curatorial classification system in lieu of generic labels. *Transmaterial* is organized according to ultra-performing, multidimensional, repurposed, recombinant, intelligent, transformational, and interfacial materials. His goal with this system is to collect seemingly dissimilar materials into groups that will identify trends that may not be evident in more generalized groupings.

Trends and predictions

When asked what research and development is garnering the most attention, Siegal says that sustainability is the most important. "Green,

DESIGNAID



Mechanisms

Expando Pin from Los Angeles–based Monogram Aerospace Fastners is a secure mechanism that is used when the back side is inaccessible. Rotating the lever the length of the shaft constricts the metal rings and expands the diameter of the shaft. Expando Pin is simple to use, requires no tools and no loose parts. It provides a tight radial fit resisting vibrations. And it is a blind operation, so it can be installed and removed from one side only.

Materials

CarbonX Fire-Resistant Fabric from Chapman Innovations in Salt Lake City is a carbon-fiber-based material that will not char, shrink, burn, ignite, or decompose when exposed to an open flame. It is different from other fire-resistant products because of its ability to resist flaming and the conduction of heat for more than 60 seconds per layer. CarbonX yarns are blended with different types of strengthening fibers to achieve the desired tensile strength and abrasion-resistant properties.





Electronics

The **Reflective Light Pipe** from Luxaura USA contains no glass and no gas. It uses LED and electricity to produce the color that glows along a solid acrylic tube. The light diffuses through the material from the LED mechanism at one end. The tube can be bent like a horseshoe, but there is a maximum bending radius. The LED source can light a tube of about 6 feet. Due to the lower power of the LED, the glow is softer, more ambient, than the bright glare of neon.

Processes

Processes generally require more than one step before they benefit an existing product. A Carbon-Reinforcing Web by IsoGrid is an additive that provides stiffness in areas where a product needs it most. Applications that have thin wall sections relative to their internal diameter benefit the most from the addition of IsoGrid. It can be applied to extremely small diameter parts, such as a fishing rod. IsoGrid provides a way to reduce weight and maintain or improve performance, particularly in sporting goods applications.



recycled, or materials that don't off-gas is very important to my clients and myself," she explains.

Brownell agrees with Siegal about the need for sustainable products and processes, especially when complying with the Green Building Council's LEED Rating System, a consensus-based national standard for developing high-performance, sustainable buildings. "LEED is taking off like wildfire, and affecting the entire construction industry. For example, just recently, the State of Washington ruled that all new state buildings be LEED Silver minimum; the University of Washington also mandates LEED Silver for all its new construction," explains Brownell. "We're even seeing shell and core developer interest in LEED, which is quite interesting. Many architects will be forced to become LEED accredited very quickly, given the market demand."

"I would say that another area concerns technology and process, which would correspond to my 'interfacial' category," he continues. "The computer is radically changing how we construct buildings, from sharing digital CAD files with subcontractors to translating data directly to building materials. For example, the Italian company Abet Laminati makes photocast tiles, using a digital imaging process for exterior laminate panels." Siegal adds, "The 'smart' materials such as color changing, shape forming, composites, and so on, are truly the wave of the future. There is also a great deal of interest in the processes of forming shapes and building components. Three-dimensional printing is used primarily in my office to create models of buildings to achieve cost and time savings."

Brownell is particularly drawn to "recombinant" materials, such as Plasphalt [a proprietary combination of asphalt and plastic, developed by TEWA Technology]. "It derives its performance from the combination of dissimilar ingredients to create a whole that is stronger than the sum of the parts," explains Brownell. "It represents a trend that many manufacturers have been implementing, which is to create these hybrid or composite materials in order to use materials in a smarter way, to use fewer raw materials, and/or to divert resources from the waste stream."

Proof is in the details

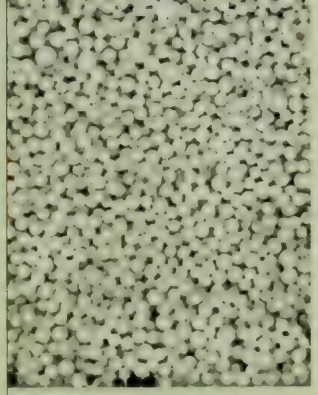
Materials make it to the market place with greater ease these days, but how do the new and unusual make it into projects? NBBJ is designing Alley 24, a 362,000-square-foot mixed-use project in the South Lake Union district

TRANSMATERIAL

Recombinant

Recombinant materials consist of two or more different materials that act in harmony to create a product whose performance is greater than the sum of its parts. **Glare** is a blast-proof fiber-metal developed by Delft University of Technology in the Netherlands. It consists of multiple aluminum layers interspersed with layers of fiberglass and adhesive bonding that are supple yet strong. It expands with a blast, absorbs the explosive energy, and redistributes the impact load.



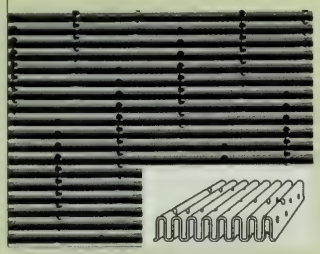


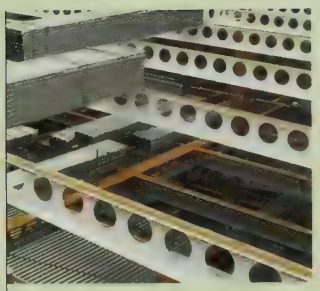
Intelligent

Materials that often take inspiration from biological systems are classified as intelligent. They can act actively or passively, and they can be high- or low-tech. **Porocom** is short for "porous construction material." It is an environmentally friendly product that reduces noise pollution. It consists of granules of recycled materials (such as sintered coal, ashes, clay, glass shards, eco grid) heated before being brought into contact with thermosetting powder paint. The end product is made by sintering the granules in a mold, causing them to stick together and achieve maximum hardness.

Multidimensional

A new trend highlights the z-axis in the manufacture of a variety of materials. One reason is that greater depth allows thin materials to become more structurally stable. Aero uses tightly corrugated, anodized aluminum sheets that are both flexible and formable. They are ideal for many interior applications for either geometric compositions or fluid curves. The lightweight material is sturdy enough to be used for wall and ceiling panels, yet is malleable enough to be rolled like a carpet.





Repurposed

Ultra-performing materials are those that are stronger, lighter, more durable, and more flexible than their conventional counterparts. SMI Steel makes a smartbeam, which is suited for long-span composite floor construction or long-span roof applications for architecturally exposed steel. Produced with castellated, hexagonal web openings or cellular, circular web openings, smartbeams operate most efficiently between 30- and 80-foor spans. The most common building types for smartbeams are office buildings, mezzanines, parking garages, or any application using a suspended composite floor.

of Seattle, scheduled for occupancy in early 2006. Part of the program calls for 172 market-rate residential units. The program also required that the architect incorporate sustainable features, including daylighting, operable windows and sunshades, and sustainable materials.

Brownell and colleague Andrew McCune led the facade-design team. Although the budget was tight, they wanted to get away from the typical Seattle cladding materials—Dryvit, vinyl siding, and corrugated

ARCHITECTS MUST DETAIL [MATERIALS] SO THAT THEY ARE BUILDABLE AND THEIR INHERENT ATTRIBUTES REMAIN INTACT.

metal, while addressing the sustainability issues. Because of Brownell's experience collecting and evaluating new products and processes, he proposed several new hardboards that could conceivably perform well as exterior cladding. At first, the client balked, not wanting to take a risk on an unfamiliar material with no precedent for the proposed application.

Brownell and McCune's subsequent research suggests an emerging trend in specification: begin at the end. Describe the aesthetic and functional attributes required of the finished component and then work backwards to find the best materials or combination of materials. After evaluating several cementitious panels, the architects were convinced that one of *Transmaterial*'s recombinant materials—Richlite—was a good alternative. A panel made of layers of paper impregnated with a phenolic binder, it's tough, long-wearing, and low-maintenance. The architects made it clear to the client that this hardboard is environmentally friendly by virtue of employing a low-VOC binder and paper from certified managed forests. They also explained that its durability and low-maintenance made it an excellent cladding material for Alley 24.

Specifying a material, however, is only a small part of the process. For new materials to make it from the catalog to the construction site, architects must figure out how to detail them so that they are buildable and their inherent attributes remain intact. In this case, the architects decided to detail the hardboard as a rain screen for several reasons, but one in particular—mold. Brownell says that mold is a problem in the damp Seattle area, because wall cavities are often too thin and trap moisture. They designed a generous airspace behind the rain screen, which will allow water vapor to exit the wall cavity, thus discouraging the

cultivation of a mold (see details on page 216).

NBBJ encourages the evaluation of the key materials on a project, but Brownell admits that it takes a great deal of time to study alternatives to time-tested materials. It requires factory visits, engineering calculations, mock-ups, multiple iterations of details, and even letters to the building department regarding code compliance. Although it is hard to assign the cost of this research, Brownell estimates that it could add 5 to 10 percent to the design-development and construction-document phases for those areas being studied. Sometimes, though, clients see the value and the long-term benefits of the additional costs, especially those who place a priority on environmentally responsible development. Still, paying extra for research is a long way from becoming the norm.

On the other hand, it's possible that clients will begin to hire additional consultants to provide their architects with material research for difficult projects with exigent circumstances. In July 2003, Arup launched an independent specialty—Arup Materials Consulting (arup.com). Materials specialist Graham Gedge said then that this was an opportunity for the international engineering firm to provide "best-practice advice on the use of materials from design to demolition, from steel and concrete to glass, stone, timber, and new materials technologies." If these and other experts can guarantee minimization of risk, enhanced performance, and added value, then we may see more innovation in design and building sooner rather than later. ■

New services for innovative materials

***Material ConneXion*, New York**
Contact: 212/842-2050
www.materialconnexion.com

***DesignAid* (Inventables), Chicago**
Contact: Zach Kaplan and Keith Schacht, 773/697-0130
www.inventables.com

***Materials Monthly* (Princeton Architectural Press), New York and Los Angeles**
Contact: Jennifer Siegal, 310/439-1129
www.materialsmonthly.com
www.papress.com
www.designmobile.com

***Transmaterial* (Transstudio), Seattle**
Contact: Blaine Brownell, 206/223-5135
www.transstudio.com
www.nbbj.com

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- **Complete the questions below, then fill in your answers (page 326).**
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QUESTIONS

1. What are recombinant materials?
- **a.** materials designed by a digital imaging process
- **b.** materials with a combination of aesthetic and functional attributes
- **c.** a combination of dissimilar ingredients to produce a smarter material
- **d.** a combination of sustainable and traditional materials

2. Included in the "wave of the future" are all of the following except which materials?
- **a.** color-changing materials
- **b.** shape-forming materials
- **c.** polymers
- **d.** sustainable materials

3. Emerging trends in specifications include which?
- **a.** multiple iterations of details
- **b.** describing the aesthetic and functional requirements of the component
- **c.** visiting factories during production
- **d.** engineering calculations

4. The article says architects will soon be forced to become LEED accredited because of which?
- **a.** market demand
- **b.** State of Washington ruling that all new buildings be at least LEED Silver
- **c.** University of Washington's mandate that all new construction be LEED Silver
- **d.** building developer's interest in LEED

5. Of the four materials-based enterprises in this article, which one uses a panel of volunteer professional designers and engineers to establish selection criteria?
- **a.** *Material ConneXion*
- **b.** *DesignAid* (Inventables)
- **c.** *Materials Monthly* (Princeton Architectural Press)
- **d.** *Transmaterial* (Transstudio)

6. Of the four materials-based enterprises discussed in this article, which one is a tool kit for architects to build their own libraries?
- **a.** *Material ConneXion*
- **b.** *DesignAid* (Inventables)
- **c.** *Materials Monthly* (Princeton Architectural Press)
- **d.** *Transmaterial* (Transstudio)

7. Of the four materials-based enterprises discussed in this article, which has a goal of identifying trends?
- **a.** *Material ConneXion*
- **b.** *DesignAid* (Inventables)
- **c.** *Materials Monthly* (Princeton Architectural Press)
- **d.** *Transmaterial* (Transstudio)

8. Which of the four is considered the gold standard for collecting, evaluating, and dispensing information about new materials and manufacturing processes?
- **a.** *Material ConneXion*
- **b.** *DesignAid* (Inventables)
- **c.** *Materials Monthly* (Princeton Architectural Press)
- **d.** *Transmaterial* (Transstudio)

9. Which best describes the iteration method used by designers?
- **a.** gathering information from industry experts and trade shows
- **b.** touching or playing with a prototype
- **c.** the repetition of a design process
- **d.** research for specific project needs

10. Which of the following does not describe ultra-performing materials?
- **a.** stronger and lighter
- **b.** more flexible
- **c.** more durable
- **d.** inspired by biological systems

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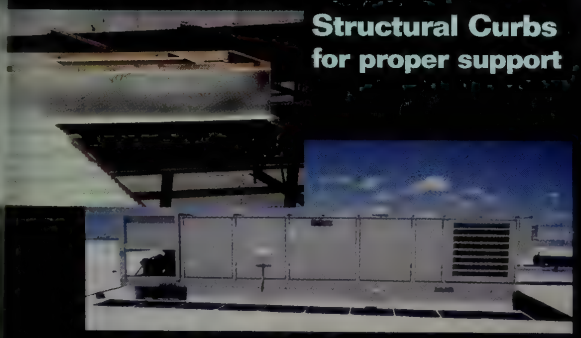


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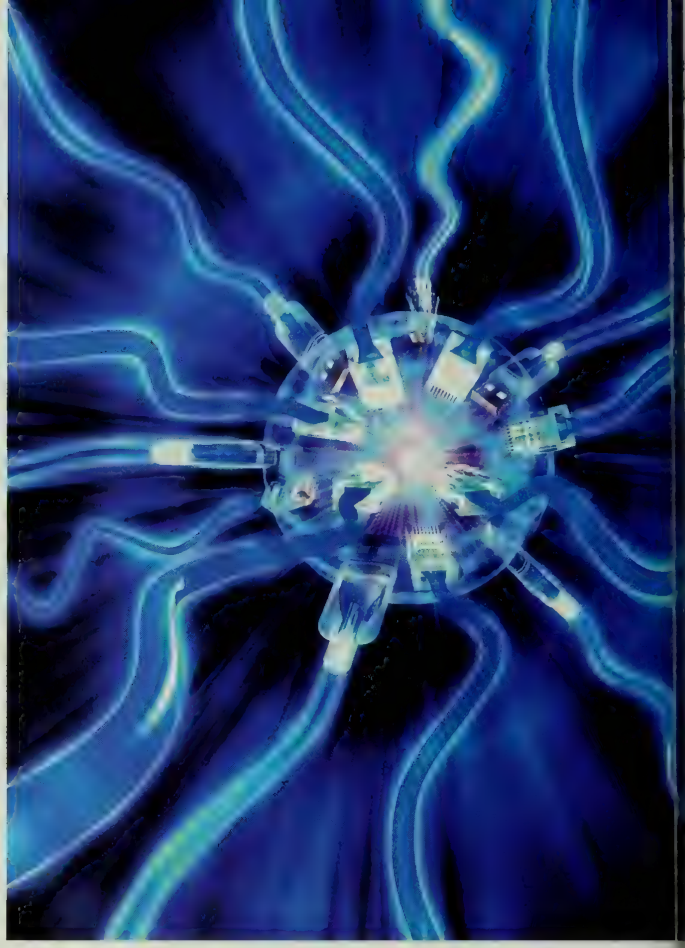
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Getting Down to the Wire



LIGHTS, COMPUTERS, PHONE SYSTEMS—THE WIRES THAT POWER OUR BUILDINGS ARE MADE OF A TANGLE OF MATERIALS THAT RAISE ENVIRONMENTAL AND HEALTH QUESTIONS.

By Alex Wilson

Even the greenest of architects seldom give much consideration to wiring in buildings. How significant can wiring be? It's just a small fraction of what's installed compared to other building materials—and don't fire codes more or less dictate what can be used? But some sleuthing about how wiring is made and used in buildings sheds light on a highly complex issue and points up a need to pay closer attention to today's practices, from environmental, health, and safety standpoints.

All modern buildings, of course, require wires and cables for power distribution and to carry voice and data signals. The term *wire* refers to an individual strand of material that conducts electrical current, whereas *cable* refers to two or more wires twisted together. Virtually all wire and cable used in buildings is wrapped in plastic insulation, and most of these components are made by bundling multiple insulated wires together, sheathing them in an additional outer jacket. Insulated wire and cable come in a large variety of types, and there are many performance standards and ratings that govern how and where they can be used. In the U.S., insulated wire and cable represents an annual $20.5 billion market that is projected to grow by more than 5 percent per year through 2006, according to a 2002 report from the Freedonia Group. There are an estimated 11 million miles of data cabling in U.S. buildings today.

In general terms, power cables in commercial buildings must be either sheathed in metal armor (BX cable) or protected within metal conduit. In residential buildings, power cables can be jacketed in plastic; this type of cable is commonly referred to by a trade name, Romex (made by the Southwire Company). Data or communications cables can be installed in most buildings without metal protection, but a specialized plenum rating is required for installation in ceiling and floor plenums.

Alex Wilson, the president of BuildingGreen and the executive editor of Environmental Building News, *has written about energy-efficient and environmentally responsible design and construction for more than 20 years.*

Many materials coming together

Copper is the dominant conductor used in insulated building wire and cable. Though less common, aluminum wire is also used; it's lighter and less expensive than copper, but also less conductive, so more material is required for the same electrical capacity. Fiber-optic cable, which is made of glass, is increasingly used for data and communications applications commonly served by insulated wire and cable. Fiber optics transmit light signals instead of electricity to carry data—and they're lighter, less expensive, and more energy-efficient than copper for data transmission. Because they don't carry electric current, insulation requirements are not as great as for metal conductors.

Copper and aluminum wires and cables are typically insulated with a nonconductive material that allows wires to be in contact with one another without conducting electric current between them. The most common resins used for insulating wire are polyethylene (PE), polyvinyl chloride (PVC), and fluoropolymers. Nylon, various rubber compounds, silicone, and polyurethane are also used for insulation and jacketing, but less widely.

Polyethylene is the most common type of insulation and jacketing for high-voltage power-transmission cables, as well as for non-plenum-rated data cables, radio frequency wiring, and audio wiring. It has excellent dielectric properties (that is, it insulates well) but is inherently less flame resistant than other insulation materials. As a

esult, it's rarely used for power in buildings, and when used, other materials are often added to it to improve its flame resistance. It is widely used or data cable installations requiring no flame resistance, such as wire uns in conduit or behind fire-rated barriers.

Polyvinyl chloride (PVC) is the most common insulation and icketing material for wiring in buildings, owing largely to its good flame esistance and low cost. In Romex-type wiring, for example, PVC is typically used both as the insulation on individual conductors and as the icketing that surrounds the bundle of individual wires. PVC has significantly greater flame resistance than polyethylene, but other additives are equired to make it flexible and stable.

In the past 10 years, PVC has come under attack by several roups because of a variety of health and environmental concerns. The iggest concern is that under certain conditions, highly toxic dioxins can e released—especially from accidental fires or incineration at the end of ts life. According to the National Institute of Environmental Health ciences (NIEHS), dioxins are known to be toxic to laboratory animals, ausing cancer and altering reproductive, developmental, and immune unctions. There are also concerns about the need to add stabilizers and lasticizers to PVC, some of which have health impacts, and PVC also eleases hydrogen chloride, a toxic, corrosive gas, when exposed to xtreme heat—both before and after it ignites.

Various fluorine-containing polymers, especially fluorinated thylene propylene (FEP), are increasingly common in data wiring insulation because of their exceptional dielectric properties, superb flame esistance, heat resistance, chemical inertness, durability, and flexibility. For plenum-rated data cable, FEP-insulated wire is often the only option llowed by code, due to fire-safety concerns. Such wire is often wrapped n a PVC jacket, though newer, more stringent "limited combustible" ratings require FEP jacketing. In addition to these performance benefits of FEP, the polymer can be recycled easily, according to DuPont.



While superb performance has spurred rapid growth of FEP wire insulation, some significant environmental and health concerns have arisen about the whole class of fluoropolymer materials (see sidebar at right). FEP does not burn easily, but it can emit toxic gases when it gets very hot, even without actual combustion. The primary gas emitted is hydrogen fluoride, which is more dangerous than the hydrogen chloride given off by PVC. Other toxic chemicals can be given off by FEP during fires; these poorly understood thermal degradation products have been referred to collectively as "the supertoxin."

In addition to toxicity concerns, the chemicals emitted by FEP (and to a lesser extent by PVC) during a fire are highly corrosive. An article by Stephen Saunders, "Cabling: What You Don't Know Can Kill You" (posted at www.wireville.com), suggests that it is the corrosivity of halogen-insulated wiring that may ultimately shift us away from halogen-based wire insulation and jacketing. Frank Bisbee, a data cable consultant and editor of www.wireville.com, suggests that how good or bad a particular type of cabling looks—relative to toxicity and potential for corrosive by-products to cause damage to electronic equipment—is highly dependent on how the tests are performed. If humidity during testing is very low, for example, there won't be enough water vapor to convert hydrogen fluoride into hydrofluoric acid, or hydrogen chloride into hydrochloric acid, and acid corrosion will be less of a problem.

The Fluorine Debate

Fluorine, chlorine, and bromine all belong to a family of elements known as halogens. Halogens form strong chemical bonds, which makes the resultant compounds durable and often inert—but their longevity also allows them to accumulate in biological systems. Many halogenated compounds have been demonstrated to be toxic in laboratory tests.

There is growing evidence that fluoropolymers, comprised almost entirely of carbon and fluorine, pose health and environmental dangers. According to some environmental and health advocates, they may be a worse threat than chlorinated polymers such as PVC.

Fluoropolymers go by many different names, but the family of chemicals is often referred to as perfluorochemicals (PFCs). They are synthetic chemicals that don't occur naturally in the environment, and they exhibit properties that have made them useful for a wide range of applications, from nonstick surfaces to stain-shedding fabric treatments to wire insulation.

In April 2003, the U.S. Environmental Protection Agency (EPA) released a preliminary risk assessment for perfluorooctanoic acid (PFOA), one type of PFC, noting that "studies recently evaluated by the agency have raised a number of potential toxicity concerns." The agency has solicited information about PFOA from the industry and the scientific community, and fluoropolymer manufacturers have voluntarily agreed to reduce emissions, to study their products to determine if they contribute to the widespread PFOA pollution, and to take steps to reduce worker exposure during manufacturing.

Several recent peer-reviewed papers in the journal *Environmental Health Perspectives* also detail the potential health impacts of PFCs. A September 2003 paper entitled "Neuroendocrine Effects of Perfluorooctane Sulfonate (PFOs) in Rats" presented evidence that PFOs can function as an endocrine inhibitor. In the December 2003 issue, another paper showed that out of 645 blood samples collected at random from six Red Cross blood banks around the country, all but one had measurable levels of PFOs.

Industry response to these concerns has been mixed. In the late 1990s, manufacturer 3M discovered that PFOA, used in producing its popular Scotchguard fabric treatment, was showing up in humans and wildlife worldwide, and in May 2000, the company announced it was voluntarily pulling it off the market. DuPont, which had purchased PFOA from 3M, has continued to produce the chemical to fuel its $1.5 billion fluoropolymer business. DuPont downplays health and environmental concerns about PFOA, but also points out that its Teflon products, such as FEP, use PFOA in manufacturing but don't contain the compound in the finished product. While DuPont claims that its fluoropolymer products are safe, the company also posts some consumer warnings on its Web site. *A.W.*

Depending on the amount of oxygen present during a fire, the resultant emissions will vary tremendously, he says.

Making wires workable

To make insulated cables easy to manufacture and safe for buildings, three additives—plasticizers, stabilizers, and flame retardants—are typically added to insulation and jacket materials.

Plasticizers are usually added to PVC to make it flexible enough to be used to insulate wires. The most common plasticizers used in PVC are phthalate compounds, which have come under scrutiny because their chemical composition mimics natural hormones in humans and other animals, causing reproductive problems and birth defects. Unlike PVC, polyolefins used for wire insulation do not require the use of plasticizers.

Stabilizers are added to some plastics to increase resistance to heat, sunlight, moisture, and other stressors. The most common stabilizers used in insulation and jacketing are lead compounds, which can constitute 2 to 5 percent of the total weight of the material. PVC is the only widely used resin for which lead stabilizers are needed. Other stabilizers beginning to appear on the market include salt-metal blends, such as barium-zinc and calcium-zinc; organotin compounds; and metal-free organic compounds. Cable manufacturer Mohawk/CDT is one of the companies shifting to lead-free PVC; according to Michael Rubera, Mohawk's director of technical support, the company primarily uses polyolefin insulation and lead-free PVC jacketing on its non-plenum-rated data cables.

Flame retardants are added to plastics to slow the spread of a fire, reduce the amount of heat and smoke emitted during a fire, and cause a fire to self-extinguish. They operate by different means. Some retardants reduce the fuel content of the material, for example; others raise the decomposition temperature of the polymer by more tightly bonding the molecules; still others emit water at high temperatures.

PVC and fluoropolymer resins are inherently flame resistant due to their halogen content, but the plasticizers added to PVC are not, so additional flame retardants have to be added to PVC for use in some wiring applications. FEP is more flame resistant than PVC, but the hydrofluoric acid released when it's exposed to heat is more toxic than the hydrochloric acid released by PVC.

Three classes of flame retardants are commonly used in wire and cable insulation: halogenated compounds (based on bromine, fluorine, or chlorine), inorganic compounds (such as antimony), and phosphorous compounds. Among halogenated flame retardants, bromine-based compounds are more effective than chlorine-based compounds, because bromine forms a weaker bond to carbon and thus interferes more effectively with combustion. A number of brominated flame retardants are commonly added to polyolefin wire and cable insulation—either alone or mixed with an antimony compound.

Chlorine is sometimes added to polyethylene insulation, but its presence can negatively affect the performance of the polymer, and as with PVC, it may release hydrogen chloride or dioxin in the event of a fire.

The most common inorganic flame retardants are metal hydrates, antimony compounds, and zinc borate. Metal hydrates work by introducing water to the fire; when used, they can be either compounded with the resin, or packed in around the wires as the cable is manufactured. Aluminum hydroxide is widely used in plastics such as polyethylene. At temperatures above 480 degrees Fahrenheit, the compound degrades into water and alumina, slowing flame spread or extinguishing the fire. Magnesium hydroxide is similar but degrades at a higher temperature; it is more commonly used with polypropylene.

Antimony flame retardants are generally most effective when combined with halogens. Antimony trioxide is commonly added to PVC, for example. Halogen acid, released during a fire, reacts with the antimony compound and produces char, which acts as a physical barrier to flame spread. Antimony-halogen reactions in a fire also keep oxygen from easily combining with the fuel contributed by the polymer.

Zinc borate, alone or in combination with aluminum hydroxide, is used as a flame retardant in a variety of halogen-free polymers. Phosphorous-containing flame retardants are very versatile; many different compounds are used, although the most common are phosphate esters (used in flexible PVC) and chlorinated phosphates (used in polyurethanes).

Other components used to make insulation and jacketing, like fillers, pigments, dyes, and lubricants, are generally of lesser environmental priority and concern than the ones mentioned above.

Searching for greener solutions

To date, there's been little attention paid to health and environmental concerns related to wiring, but one group that has studied the issue in some depth is the Massachusetts Toxics Use Reduction Institute (TURI). According to TURI deputy director Liz Harriman, there are significant international efforts to reduce lead use in insulation and jacketing. The European Union's directive on Waste Electrical and Electronic Equipment (WEEE) and the Restriction of Hazardous Substances Directive (RoHS) will ban lead from electrical equipment and electronics by 2006, and some manufacturers are removing lead from their products before this deadline. "TURI is working with the wire and cable industry and their suppliers in Massachusetts to keep them competitive in the global marketplace," Harriman says.

Some manufacturers are developing wi insulators that are free of halogens, which have come under fire for negativ environmental and health effects.

In terms of fire safety, U.S. codes rely exclusively on test standards for flammability and flame spread, ignoring the risks of toxic and corrosive gases released before and after ignition. This approach differs from some European codes, which assume that incapacitation from irritating gases can affect occupants' ability to escape from a building fire.

There is clearly interest in some circles in specifying halogen-free wiring. Clear alternatives to halogenated wire and cable are polyolefin products; to use these for insulation and jacketing, compounds are typically added for flame resistance, as described earlier. Borealis Compounds, the U.S. division of the Danish company Borealis A/S, offers such products in the U.S., but sales are limited. They're used primarily in subway systems and other locations where acid emissions from halogenated compounds are unacceptable. The manufacturing costs of flame-resistant polyolefin wiring are significantly higher than

nose of PVC, according to a Borealis engineer, and regulatory changes would probably be required to bring about a significant shift toward olyolefins from PVC.

Some manufacturers, including Mohawk/CDT, offer PVC-insulated wiring without lead or other heavy metals. Demanding lead-free or eavy-metal-free cable can hasten the transition away from these toxins.

Yet another approach is to specify polyolefin cable with lower ame resistance and place it in a fire-protected environment (e.g., metal onduit or cellular cores of concrete floor panels). Such a method will add o a project costs, however, and the trends are generally in the other direction: specifying plenum-rated, FEP-insulated cable that can be installed in lenums without additional protection.

For data and voice signals, fiber-optic cables and wireless technologies are increasingly viable options. One fiber-optic cable can replace nany copper cables in high-capacity applications, and wireless data networks are quickly supplanting hardwired connections in settings such as lassrooms and meeting rooms.

.eave no wire behind

A new requirement in the 2002 National Electrical Code (NEC), known as Article 800, specifies that abandoned cables must be removed from plenum spaces. The change was made because of a concern that leaving old cables in place when new ones are added leads to dangerous fuel loading in plenums. Though it's already being enforced in some jurisdictions, he requirement generally kicks in when a space is remodeled.

Removing old cable during renovations and retrofits raises the ssue of lead exposure. Since 1984, most cable jackets have been made with lead-stabilized PVC. As the plasticizer leaches out over time, the jackets become brittle and the lead migrates to the surface, leaving behind dust with a high lead content. This dust, loose in ceiling or floor plenums, can easily reach building occupants or workers removing old cable.

Although there seems to be no concerted effort to study or address this potential health hazard, the new NEC requirement forces building owners and occupants to consider potential removal options when cables are first installed. Many owners are now requiring tenants to remove cables once they leave a space; this requirement should lead to more frugal use of cable, the installation of systems that facilitate eventual removal, and better labeling practices for cables in use.

Once old wire and cable is removed, what can be done with it? Copper is a valuable commodity, so old wiring is commonly recycled, but the various additives in wire insulation and jackets raise concerns about incineration, and most of these materials are difficult if not impossible to recycle. Of all the wire insulation and jacketing materials, FEP is the most recyclable, though recycling programs for this material are not known to exist and may not appear any time soon, since the labor involved in identifying and separating it out is substantial.

Wrapping up

Wiring remains a challenge for designers and builders involved in sustainable design. Acceptable alternatives are heavily controlled by codes that focus almost exclusively (in the U.S.) on flame spread and smoke development, with no regard for the toxicity of wire and cable products. Whether this will be considered in fire-safety testing of wire and cable remains uncertain, but it seems clear that the EPA and other agencies will continue researching the safety of halogen-containing insulators.

Perhaps the best news is that better solutions are on the way. "New, innovative materials that are halogen-free and flame retardant will hit the market," says TURI's Harriman. "There are significant drivers for their development, even if not from the building industry." ■

Greener Wiring: A Checklist for Action

General Guidelines

Design for easy access. Install wiring in readily accessible wiring chases to simplify future modifications.

Minimize wiring runs. Reduce material use by installing high-capacity runs to local hubs, rather than connecting each directly to a central hub. Local hubs can connect to workstations via wireless or short-wired connections.

Avoid wiring in exterior walls. Limit wiring runs and receptacle placement in exterior walls, particularly in residential buildings. Such installations interfere with insulation and can result in significant air leakage.

Avoid the need for plenum-rated and limited-combustion cable. Run data cable in metal conduit, sealed wiring chases, or cellular raceways in concrete decking to avoid the need for highly flame-resistant cable.

Don't overwire. Design for future wiring needs, but avoid installing wires unless there is an immediate need for them.

Design for future removal. Design installations so that wire can be easily removed when not in use.

Minimize EMF. Rely on "prudent avoidance" strategies to minimize exposure of building occupants to electromagnetic fields.

Go wireless. Use wireless data connections instead of hardwired ones for maximum flexibility and minimum material use. Wireless connections may be usable in some local areas, even if they are not usable buildingwide.

Specifications

Plan for future needs. Install voice-data-video (VDV) cable that can serve upgraded networks so that cable will not become obsolete as quickly.

Eliminate use of lead stabilizers. Some PVC wire insulation and jacketing are composed of 5 to 10 percent lead by weight. Specifiy products that don't contain lead stabilizers.

Don't install lead-stabilized cable loose in plenums. To keep lead dust out of indoor air, cable that's stabilized with lead (which includes most plenum-rated cable) should be installed in metal conduit and not directly exposed to conditioned air circulating through ceiling or floor plenums.

Specify halogen-free products. Wherever possible, specify wire and cable insulation and jacketing that do not contain PVC, chlorinated polyethylene, FEP, or products containing brominated flame retardants.

Specify heavy-metal-free wire and cable. Cadmium, chromium, and other heavy metals are often using in pigments for wire insulation and jackets. Avoid using them whenever possible.

Use fiber-optic cable. Fiber optics, widely used to carry voice and data signals, require less insulation and jacketing than copper wiring. It may be possible to run fiber-optic trunk lines to smaller copper distribution lines, thus reducing total insulated cable use.

Removal

Remove old cable. As per 2002 revisions to the National Electrical Code, remove cable that is not being used or will not be usable in the future.

Follow safety precautions when removing old cable. Old cable contains high levels of lead dust. Ensure that workers wear proper respiratory protection, and seal removed cable in plastic bags.

Recycle old cable. Deliver old cable to facilities where it's properly recycled; never burn old cable to recover copper.

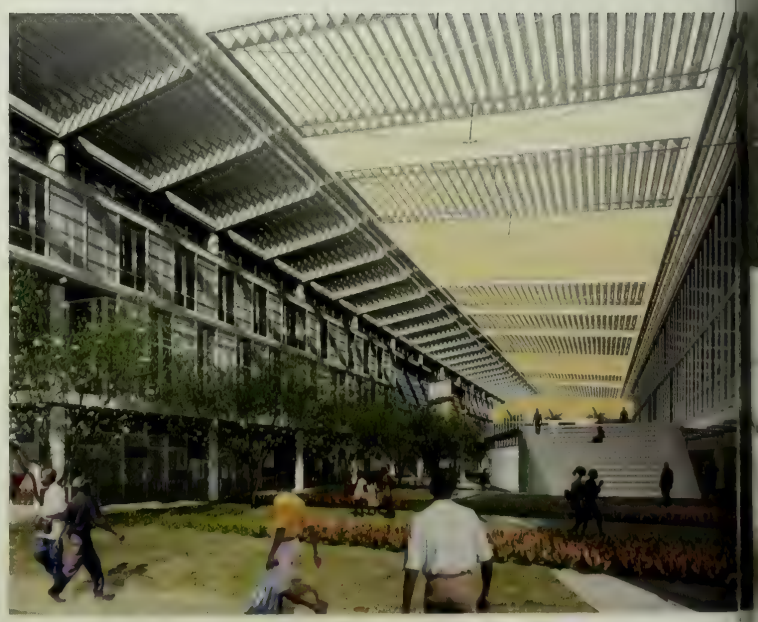
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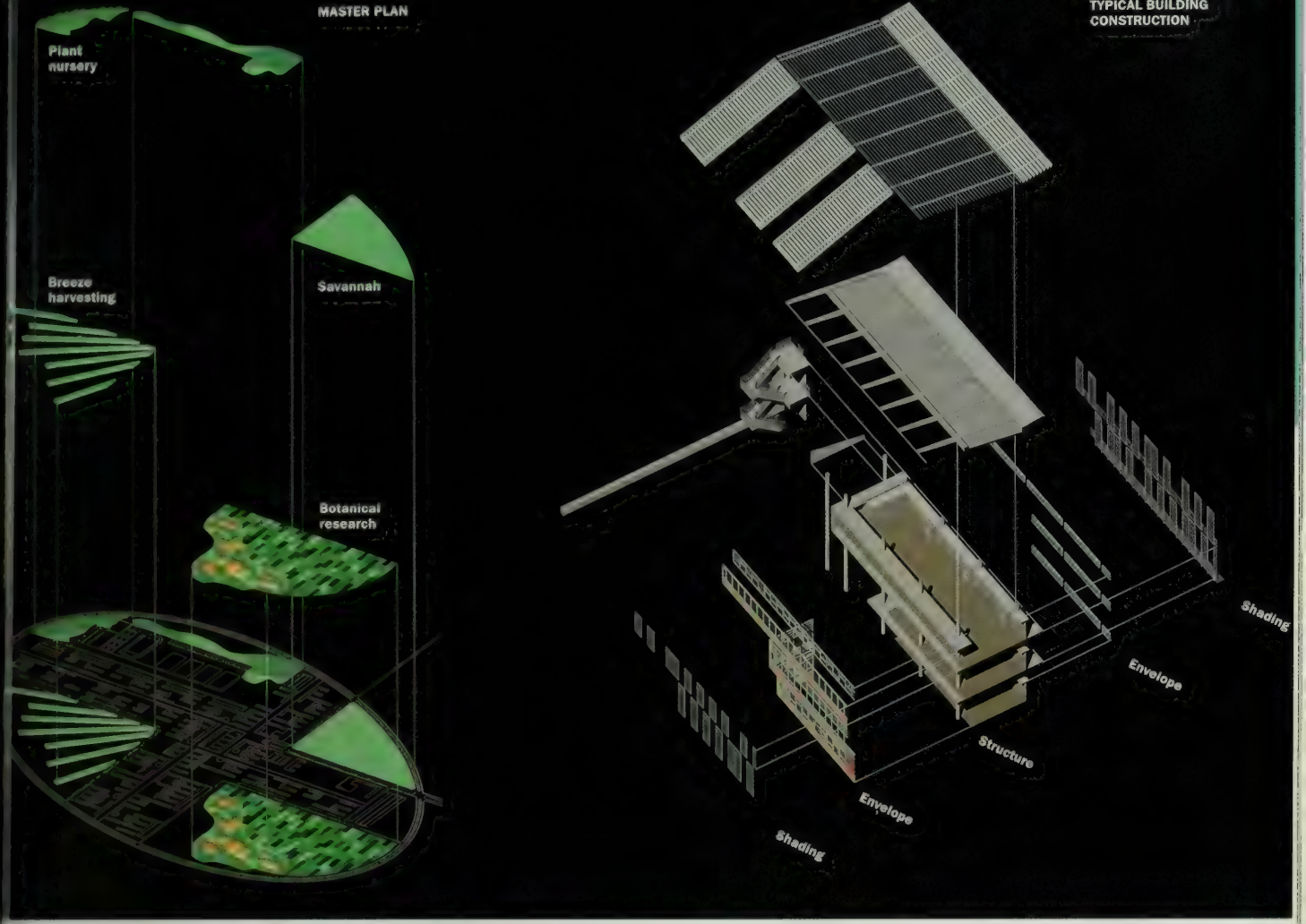


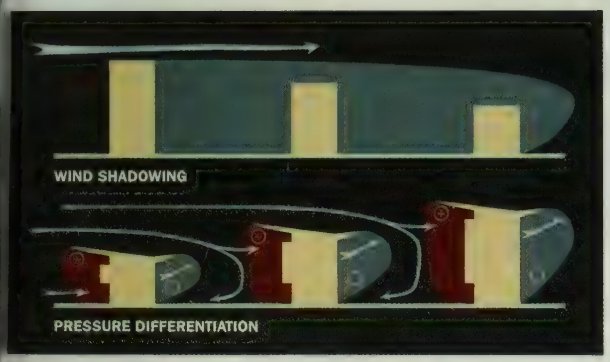
By Deborah Snoonian, P.E.

Green design has taken center stage in a country struggling to its feet after more than 25 years of civil war. Perkins + Will, with sustainability consultants Battle McCarthy, has developed a master plan for a new university for 17,000 students in Angola's capital city of Luanda. The eco-efficient campus of nearly 5,000 acres integrates landscape, building orientation, and massing to take advantage of wind and sun. The design team, led by Ralph Johnson, first imagined a circular plan with quadrangles that pinwheeled from a central point and academic buildings located equidistant from the campus center, to project an image of equality the school's leaders wanted. After studying the local topography and arid, savannah climate, the shape was altered to an ellipse that better conforms to the site's natural drainage patterns, which also reduced landscaping costs. The main axis of the campus is rotated off true north to optimize both passive cooling and daylighting. Now under construction, the master plan will be realized over the next 10 to 15 years. ■



IMAGES: COURTESY PERKINS + WILL





The master plan calls for low buildings to be sited upwind of taller ones (left) to create the pressure differentials needed for wind to penetrate deep into the campus. Many buildings will be connected at their roofs by a louvered-shade system (below) that screens out strong rays and enables turbulent, cooling eddies to form outdoors. Structures will have screens and light shelves to balance lighting needs with minimizing heat gain (above right). Rows of trees will be planted in the southwest portion of the campus to channel the savannah breezes (above left).



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Tech Briefs

Projects: A sleek new lift system moves vintage vehicles in technofuturistic style • Infrastructure: In London, a pedestrian bridge rolls up and out of the way for nautical traffic • Codes and standards: Study finds few U.S. municipalities accept electronic permitting data

BYTES

eeking a way to generate electricity ... motion of ocean waves, a ompany called Energetech recently nchored a 486-ton wave turbine off ..., 150 miles south f Sydney. In 2006, they will install a milar turbine off the coast of Rhode land.

he U.S. Green Building Council and he National Environmental Education ... ning Foundation have teamed up o launch greenerbuildings.com, a free Veb site that provides information and esources about key environmental ssues related to buildings and facility nanagement.

Researchers from Oak Ridge National ..., and the University of ennessee have formulated a new, tronger type of steel with an atomic ... ure that's amorphous, like glass, ather than crystalline, like most metals. Practical applications are still a year or wo away.

The General Services Administration has posted a free, searchable data-base of companies that recycle construction and demolition waste, at cwm.wbdg.org. The EPA estimates that 136 million tons of such waste are generated each year.

At MIT, architecture professor Larry Sass is working on a software program that would let architects quickly design temporary emergency shelters from off-the-shelf, standardized sizes of plywood sheets. The software would determine automatically the most efficient way to assemble the structures, based on input from the architect.

The AIA and the Associated General Contractors have posted a new primer on project delivery methods online. It's available free of charge to members at either www.aia.org or www.agc.org.

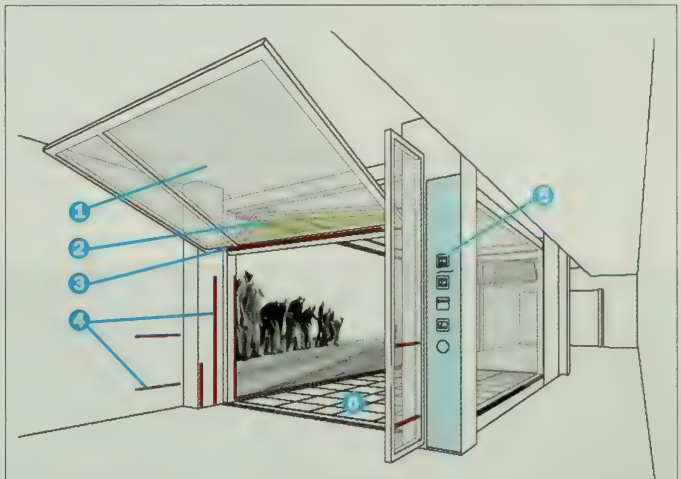
Need a lift? New York firm designs a high-tech car-transport system

It's an elevator! It's a material lift! No, it's the Vertical Reciprocating Conveyor (VRC), a transporter custom-built for a vintage-car collector who stores several vehicles in a two-story lot. Its designers, the New York firm ROART, coined the moniker. ("We still don't really know what it means," admits project architect Eran Shemesh.) Combining sleek materials, sensors and actuators, and innovative digital signaling technologies, one might call the VRC a 21st-century machine for moving.

The firm began the project by researching the history of cars and driving, and principal Ran Oron ran across an old black-and-white photo of an early auto race. The client loved the idea of driving onto the lift and becoming part of the life-size image. From that point forward, working with the building's architect, Derek Larson, "we thought of the VRC less like a lift and more like a pleasure machine—a mechanical device that would possess the same technological ingenuity and design sophistication as the cars it transports," Oron says.



The car lift, or VRC, glows softly, as if welcoming the vehicles it transports.



1. *Hoistway door*
2. *Platform gate*
3. *Safety edge*
4. *Infrared sensors*
5. *Control panel*
6. *Lift platform*

Poetry in motion

The site's constraints dictated many of the design decisions. The two-floor garage, only 15 feet wide and 100 feet deep, left no room for doors that slide open to the side or pivot outward; for aesthetic reasons, the architect eschewed garage-style rolling doors on tracks. Instead, the firm designed doors and gates custom-manufactured of stainless-steel mesh, powered by a system of sensors and actuators that elevate and tilt each barrier out of the way. The two gates are installed on the lift itself. When a gate is raised, it slides up on recessed, multifaceted raceways that force its upper and lower points to take separate paths as the gate tilts into the cab. The doors, installed on the building's hoistways, take the opposite motion, sliding first up and then tilting outward with the help of linear ball-screw actuators. The motions are synchronized to an elegant choreography, giving the visual effect of a giant pair of scissors that moves in three dimensions. The speeds, trajectories, and timing can be changed at will.

Five full-scale mock-ups of the doors and gates, each with different geometries and movement trajectories, were tested before the architects found the effect they

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were satisfied with. "We reviewed three options: a mechanical system with chains and cables, a hydraulic system, and an electrical system. In the end, we needed the actuators to make the motion smooth and reliably repetitive," says Oron.

To prevent injuries (or—gasp!—dents and scratches), the architects also installed a series of infrared sensors around and inside the lift that detect obstacles within a prescribed safety zone, and halt or reverse the motion of the doors and gates. Programming the safety system so that the sensors would not interfere with one another, or with the normal trajectory of the doors and gates, was no small challenge.

The call buttons were given equal attention. ("This one took at least 15 mock-ups to get right," says Shemesh.) Instead of conventional pressure-activated buttons, ROART designed a multilayered glass panel embedded with charge-transfer touch sensors, which are capable of detecting near-proximity or human touch. When the user touches a panel, the sensor sends a signal to a control room that then transmits the proper instructions to the lift system. The panel itself is composed of seven layers of glass, interlayers, and stainless-steel mesh. Some layers are frosted, some clear, and the middle layer has a sandblasted mirror finish. Four images are etched onto the back side of the front layer of each panel; they indicate what floor the lift is on, and whether the door and gates are open or closed.

Picture-perfect touches

Incorporating the vintage car-racing photo at life-size also took some sleuthing. Originally, Oron intended to have it enlarged and silk-screened onto laminated glass for one wall of the lift, even going so far as to track down Andy Warhol's former silk-screener for the task. But ultimately the process was deemed "a logistical nightmare" because the five 4-by-8-foot panels that constitute the image would have had to be printed at the same time, in a dust-free environment, with no room for error or damage to the glass. Then one of ROART's collaborators, Depp Glass, told Oron they'd been working with DuPont on a new system that allowed digital printing on an interlayer film typically used to laminate glass, with an ink DuPont invented for the process. At the time,





Electro Kinetics built the doors and gates out of custom-made stainless-steel mesh. Behind the glass call panel (left in photo at right), theatrical multicolored LED fixtures were installed to indicate the VRC's position and status.

DuPont's digital printer was only a foot wide, but a year later the company developed a working 4-foot-wide printer, and Oron had his image panels. As the client requested, the photo retains the pixellated, grainy character of a silk-screened image—thanks to an algorithm ROART wrote to alter its appearance in Photoshop. Fiber-optic lighting illuminates the five-panel image, while LEDs light up the lift's glass floor panels.

Call it a VRC, a pleasure machine, or a lift: This project is a sophisticated mini-laboratory of the architecture of motion. And working out the kinks in the kinetics was exactly the sort of detective work that the firm enjoys. Oron concludes, "We were fortunate to have the luxury of time to grapple with the challenges. As Einstein said, it's not that we're smarter—we were just able to stay with the problem longer." *Deborah Snoonian, P.E.*



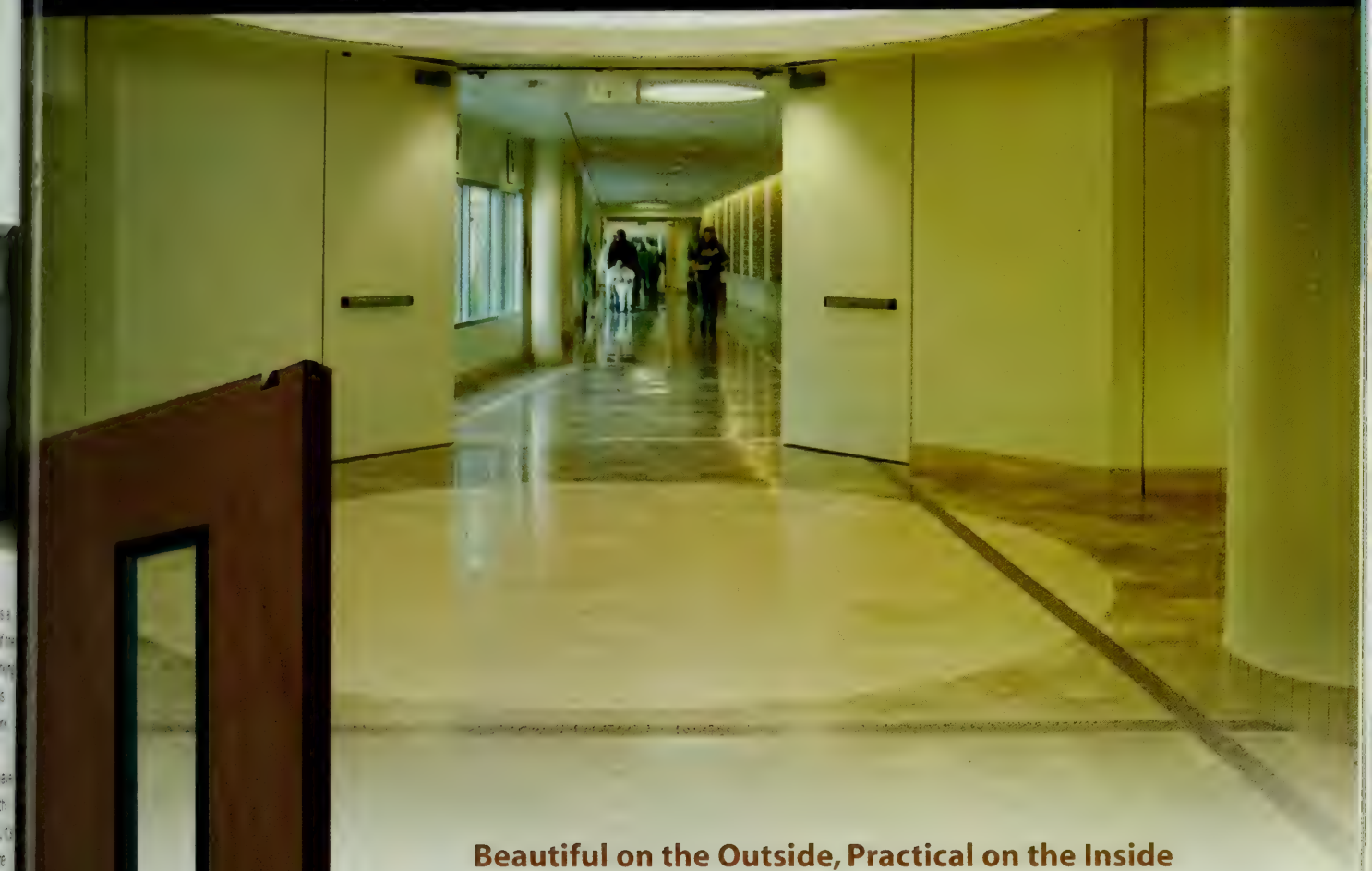
This London Bridge doesn't fall down—it does a backbend

The latest cultural adornment to a 2.1-million-square-foot mixed-use development in the Paddington region of West London is a pedestrian bridge that's as much mobile sculpture as engineered structure. Spanning the mouth of a small dock off the Grand Union canal, the Rolling Bridge rests steady for foot traffic, but opens for boat navigation by curling upward and onto its one fixed support, like a scorpion's tail. The 39.4-foot-long bridge, which has a steel frame and timber deck, was designed by Thomas Heatherwick Studio of London.

The structural metamorphosis from footpath to wheel has become

The Rolling Bridge (photos above) goes through its motions to make way for nautical traffic. The hydraulic system is controlled remotely.

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a weekly spectacle for passersby since the bridge's inauguration in September. The feat occurs more often when needed for navigation. "We think it's fantastic," says Mike Rayner, an official with Chelsfield, Paddington's lead developer, which commissioned Heatherwick for the project.

Set among a number of Modern, understated buildings, the bridge was detailed "seriously and maturely" and is "almost boring" under normal use, says Stuart Wood, a project designer. "That heightens the element of surprise when it starts to do its action. There is a strong element of theater."

Structure or sculpture?

Since completing his studies in 3D design at Manchester Polytechnic and later the Royal College of Art in London, 34-year-old Heatherwick has adeptly blended art, architecture, engineering, and product design in his work. Among his recent pieces is a seven-story sculpture of 150,000 glasslike beads, linked by more than half a million miles of wire, for a corporate headquarters in London.

Heatherwick says he wanted the bridge to open in a "sensuous manner, transforming itself entirely, rather than simply lifting up and out of the way." Conventional drawbridges or retracting bridges "look broken" when opening, adds Wood. A structure that curled upon itself, on the other hand, would "look complete in both states."

Heatherwick collaborated with an engineering team that included structural designer SKM Anthony Hunts of Cirencester. Heatherwick and the firm had been looking for a site to build an all-glass bridge they had conceived in the 1990s, says Alan Jones, a principal of Hunts.



Thomas Heatherwick on his Rolling Bridge.

Paddington looked like a possible setting when Chelsfield called, but the scheme was ultimately replaced by the Rolling Bridge.

The 4.5-ton bridge is made of eight segments joined together by hinges. Its articulated balustrades act as trusses, with the deck-floor elements acting in tension and the handrails in compression. Seven vertical pistons above the deck hinges form part of the balustrades. They also control the bridge's opening motion, which is powered by underground hydraulic equipment.

When the bridge needs to be opened, the pistons along the deck elongate. As this happens, articulated sections of the balustrade over each part of the footpath turn toward each other, causing the bridge to curl up. When fully open, the bridge forms a loop with the tip resting on the base. Closing the bridge involves reversing the process in an operation lasting less than three minutes.

Initially the bridge was designed to be retracted into three quarters of a full circle by pulling cables in the handrails. The structure would have opened again under its own weight, without the aid of machinery. But for better access and other reasons, the design team opted for a bridge that would bend into a complete circle,



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hich eliminated the possibility of sing gravity's forces for reopening . At that stage, the bridge was to e curled section by section, with istons activated in turn, expending inimum energy, says Jones. Then leatherwick asked the engineers the segments could be retracted t the same time and speed. "I ink this is a work of art," Jones eclares. "It ceased to be purely tructural when its function was etermined more by aesthetics an mechanics."

Considered a maverick among he U.K.'s design circles, Heather-ick has shown a flair for the ramatic at many scales. In 1997, e designed a window display for larvey Nichols in London that broke he plane between private and ublic space, extending from the tore onto the sidewalk. Upcoming ork includes the U.K.'s tallest nonument, which will be built at Manchester Stadium; a Buddhist emple in Japan; and a tote bag for lothing manufacturer Longchamp. *Peter Reina*

Few jurisdictions in U.S. use electronic documents for permitting

The Stone Age, the Barbarian invasions, the submittal process for building permits in the U.S.: Unfortunately, these three things share a similar level of sophistication, according to the results of a recent study conducted by the National Conference of States on Building Codes and Standards (NCSBCS) and the AIA, which are making strides to update the technologies and processes associated with the collection of permits. The AIA is part of the NCSBCS's National Alliance for Building Regulatory Reform in the Digital Age.

The survey, conducted last winter and released in June, studied state and local government techniques for building-document submittal, and revealed seriously outdated procedures. Out of 120 jurisdictions representing 16 states and 26 major cities, only 16 accept plans electronically over the Internet, the survey shows. Meanwhile, less than 10 percent of reporting jurisdictions share electronically submitted plans with other districts, and 47 of the responding areas don't accept electronic plans at all. Of those that do accept plans digitally, only about five or six, says NCSBCS's executive director Bob Wible, keep the process electronically based all the way through (most state governments still require documents to be wet-sealed on paper).

"It's 2004. I was astounded by how few jurisdictions had implemented any changes at all," says Paul Mendelsohn, senior director of state and local affairs at the AIA, who attributes the lack of progress mostly to squeezed budgets, bureaucratic inertia, out-of-date laws, and the lack of interoperability in available design software. The advantages of updating the technology, Mendelsohn adds, include improved approval speed, accuracy, job-site safety, and perhaps most important, economic benefits. "If a city doesn't have a good system and can't get plans passed quickly, companies will jump elsewhere," he points out.

The good news is that 33 of 54 responding jurisdictions said they expect to accept electronic plans within the next one to two years, and the NCSBCS's alliance partners are undertaking several initiatives to assist state and local governments making the transition. They've drafted model streamlining processes, procurement requirements, and systems for submitting and tracking online permits and plans, as well as field inspection and code enforcement. The AIA may retain a consulting firm to help lay out the case for improved digital plan sharing, and the NCSBCS is also helping jurisdictions to update their laws concerning electronic sign-off, and to create new standards for interoperability of building-permit data. ***Sam Lubell***



Illustrations courtesy of Lord, Aeck & Sargent

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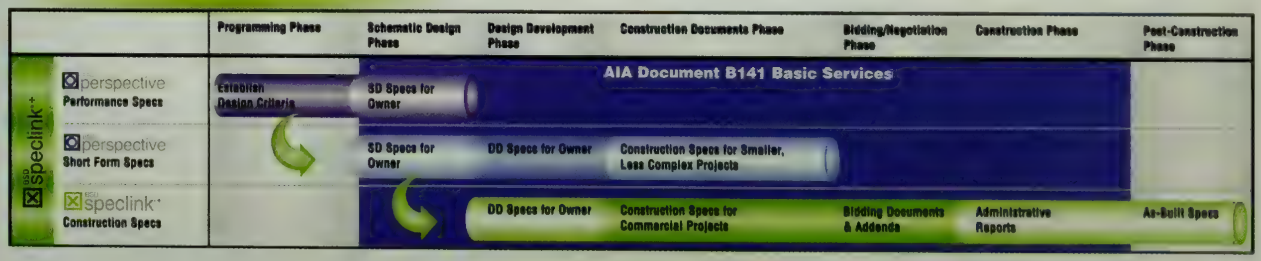
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Colors

Belden Brick is available in a world of colors including soft whites and creams, golden buffs and dusty tans, delicate pinks and cinnamon reds, chocolate browns, pewter grays and coal blacks. With so many colors to choose from, your options are truly endless. Here is a small sample of over 200 color ranges, 13 textures and 16 different sizes.

Landmarks in Brick

Sizes & Shapes

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as many as sixteen different sizes
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need. Plus, Belden has made thousand
of special shapes to provide speci
details for individual projects. Need a
"impossible" shape for your project
Then call Belden Brick and learn ho
the impossible can become reality



Textures

Belden Brick offers thirteen different textures that range from silky smooth finishes to rugged randomly textured styles. Each texture can make its own distinctive contribution to the visual impact you seek.









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Tech Products

Updates for 3D CAD, collaboration tools

By Deborah Snoonian, P.E.

.amina 1.0
.amina Design
www.laminadesign.com
Windows only

This new software package enables the fabrication of large-scale, free-form structures from planar materials like plywood, plastic, and metal. Useful for a wide range of architectural applications, including interior finishes, lighting and product design, and custom signage, Lamina works by taking a 3D model file and "breaking up" the structure into machinable 2D parts that are fabricated using laser cutting, waterjet cutting, or plasma cutting, depending on the material used and the size of the desired end product. The software automatically accounts for material properties like thickness and flexibility, and subsequently adjusts joining angles and joint types automatically during the cutting process. The preferred 3D file formats that Lamina can accept are OBJ and 3DS-formatted files, but it can also use STL files, which are common in digital fabrication.

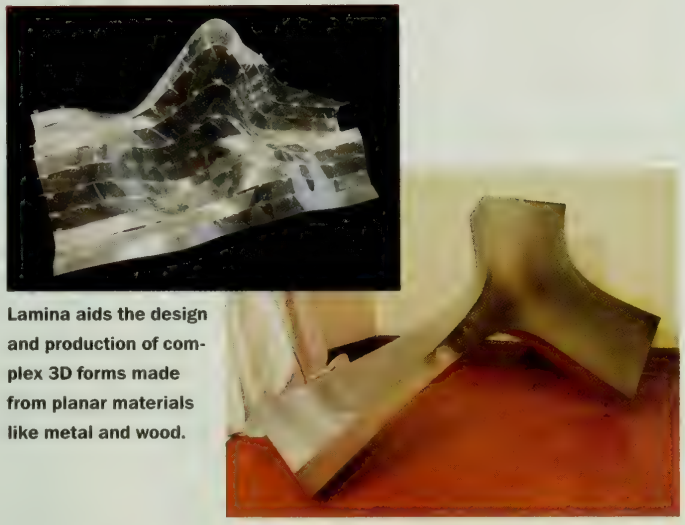
Revit 7
Autodesk
www.autodesk.com
Windows only

Autodesk has followed an aggressive upgrade schedule for Revit (this release is the second major update in the past year). New features include the "building maker" design environment that lets users map conceptual models to components such as doors and curtain walls; parametric components that are alterable, so that repeating elements within a design, such as an office, can be changed quickly throughout a model; and improved tools for drawing tasks, including change-tracking legends.

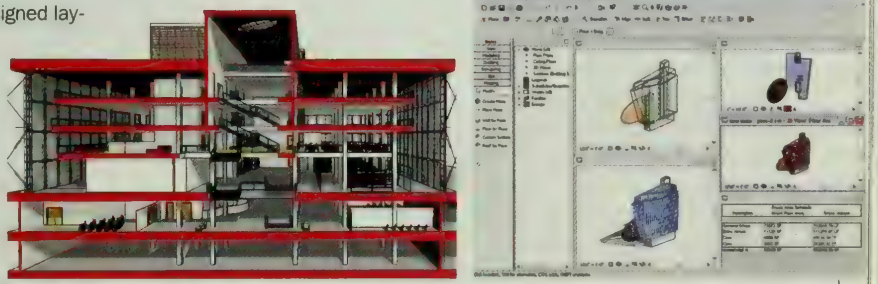
ArchiCAD 9
Graphisoft
www.graphisoft.com
Windows and Mac

The biggest revision in the latest version of Graphisoft's flagship CAD software is a simplified interface that users can customize with tools of their choosing. A redesigned layout for palettes gives users up to 50 percent more room on-screen to see their designs (rather than software tools). AutoCAD DWG files can be dragged and dropped directly into ArchiCAD for changes and modifications. Reengineering the product has also improved its speed; the company says that tasks like automatic section generation occurs up to 10 times faster than in previous versions. Productivity-boosting features include enhanced text formatting and the ability for multiple users to share the same customized work environment to make it easier for clients to adhere to companywide layering conventions and drafting standards. Graphisoft has also incorporated the LightWorks rendering engine into the product, which improves its presentation capabilities and its support of output using the popular PDF format.

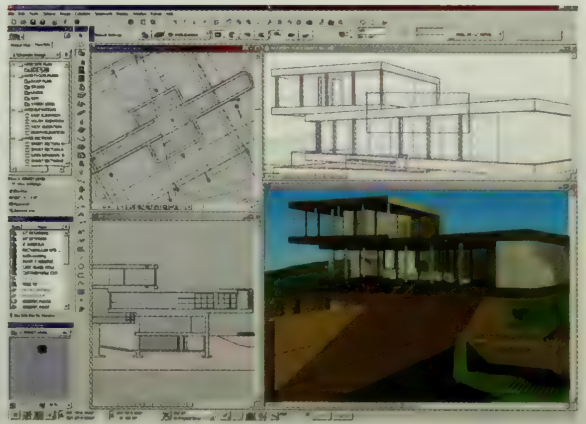
For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at **www.architecturalrecord.com**.



Lamina aids the design and production of complex 3D forms made from planar materials like metal and wood.

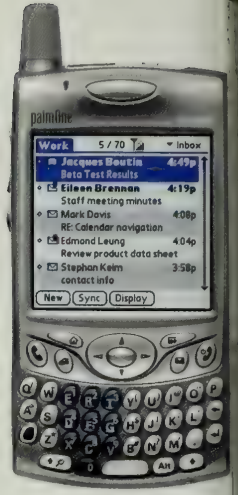


Revit's latest upgrade offers enhancements to its parametric components.



Graphisoft's revised interface for ArchiCAD 9 lets users customize tools and see more of their designs on-screen.

Tech Products



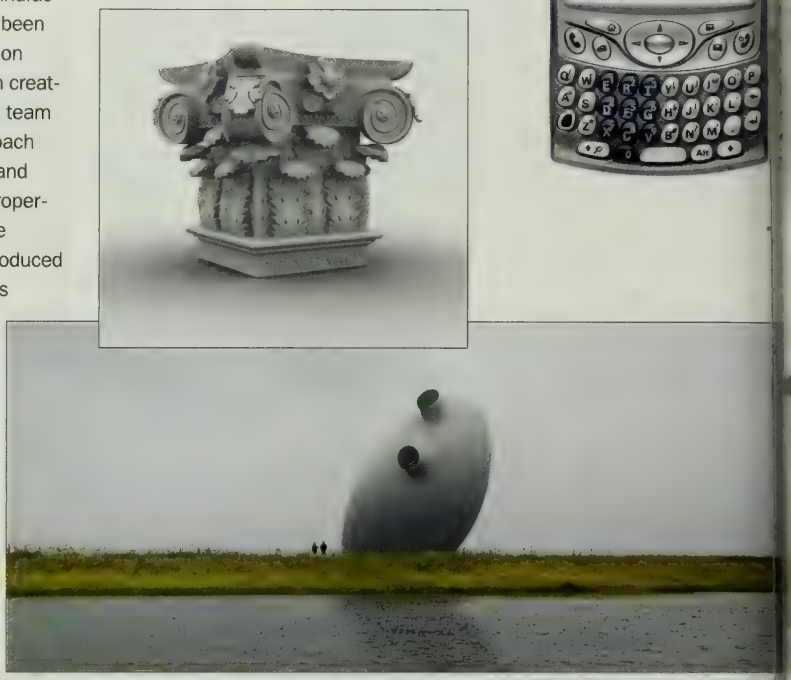
The Treo 650 Smartphone is compatible with mobile-phone carriers Cingular, Sprint, and T-Mobile.

Treo 650 Smartphone
palmOne
www.palmone.com
Palm OS/Windows and Mac

After the wild success of last year's Treo 600, palmOne has upgraded its popular mobile device with several new and improved features. Like the older version, it combines a Palm handheld organizer, a full-featured mobile phone with speakerphone and conferencing capabilities, a digital camera, an MP3 digital music player, and a Web browser. Carriers Sprint, T-Mobile, and Cingular provide mobile-phone service for the Treo. Customers can download their e-mail messages using palmOne's VersaMail technology, and for corporate customers, the 650 also enables synchronization with Microsoft Outlook data such as messages, task lists, and calendar items. Integrated Bluetooth technology communicates wirelessly with accessories such as headsets, car kits, and computing devices, and a full (if tiny) keyboard lets users type text messages, e-mails, or phone numbers on the fly. Expansion cards also let users add custom content and applications like games and electronic books. Even among smartphones, this device is an overachiever.

Texxus
Texxus
www.texxus.com
Windows and Mac

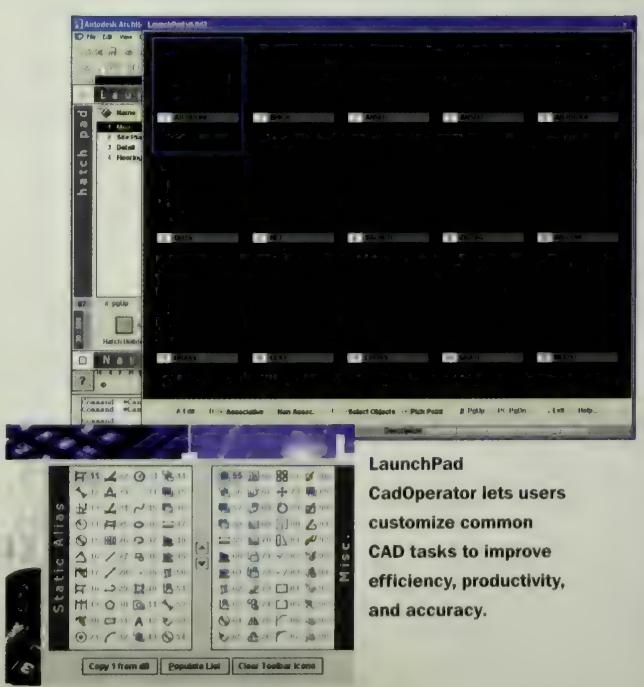
Texxus is a specialized service firm offering surface design, texture design, and rendering and manufacturing capabilities. Originally envisioned as a company to assist designers in creating custom-textured surfaces for injection-molded materials, the firm now used 3D CAD/CAM technology to model complex geometries and surfaces that can be mass-produced using digital manufacturing methods, in [illegible]terial—including stone, concrete, wood, terrazzo, and rapid-prototyping materials. The company works on projects on various scales, from model development to full-scale manufacturing, and its services have been employed for both preservation work and new projects. When creating customized surfaces, the team combines its aesthetic approach with an intimate knowledge and understanding of material properties and behavior, so that the surfaces imagined can be produced cost-effectively. The firm uses several different software programs in its work, including CATIA and ProEngineer. Projects the company has supported include the Diana, Princess of Wales Memorial Fountain in London's Hyde Park.



The Texxus team is helping design the Skipper Library in England (above), a pebb shaped structure that will house a private collection of Japanese manuscripts.

LaunchPad CadOperator
LaunchPadOffice
www.aclaunchpad.com
Windows only

As any budding architect knows, CAD drafting can be mind-numbingly rote and repetitive. This combined software/hardware package aims to slash drafting time by 50 percent or more (a video showing a mock race between two CAD operators using traditional entry methods versus this product even verifies the claim). A specialized keyboard and mouse device simplifies repetitive tasks and reduces the number of keystrokes needed for common operations. The software allows users to create shortcuts for, and libraries of, specialized "blocks" (combinations of CAD keystrokes or "objects" that repeat throughout a project), hatch patterns, color combinations, layering rules and styles, line weights, and other popular drafting tasks. Training videos and online tutorials are also available to bring users up to speed—literally.



LaunchPad CadOperator lets users customize common CAD tasks to improve efficiency, productivity, and accuracy.



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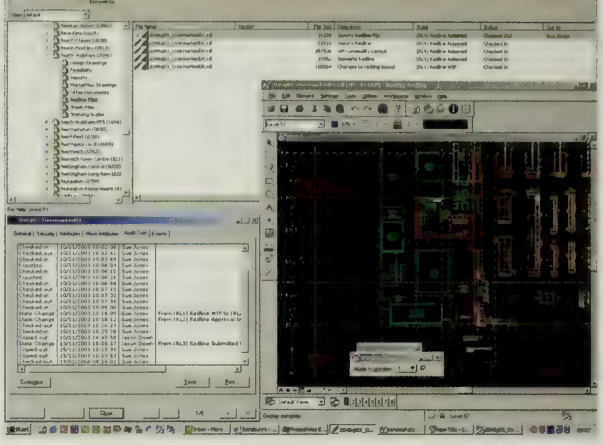
Tech Products

ProjectWise V8 2004
Bentley Systems
www.bentley.com
Windows only

Bentley's collaboration software provides a repository and common platform for project team members working in far-flung locations. With ProjectWise, users can exercise control over the flow of data throughout a project's lifetime, such as creating checkout and approval procedures for drawings and automatic notification to team members when critical documents have been revised. Features include the ability to search, query, and navigate all content stored, including metadata such as keywords and individual building components, for example doors or windows, that are modeled in larger project files. Facility managers can also use the system to track a building's operations, maintenance, and renovation projects. Supported file types include those from all of Bentley's design and engineering software, as well as AutoCAD, Microsoft Office documents, and some Adobe applications.

Xdrive
Xdrive
www.xdrive.com
Windows only

Backup storage for critical data is never farther away from your Web browser with Xdrive, an online storage solutions company that has several small and medium-size architecture firms as clients. Users can access their storage areas directly via a Web interface that works with all popular browsers, or through the company's desktop software. Pricing varies depending on the amount of storage space desired.



Bentley's ProjectWise software is being used by a 150-member project team designing stores in the U.K. for Sainsburys Supermarkets.

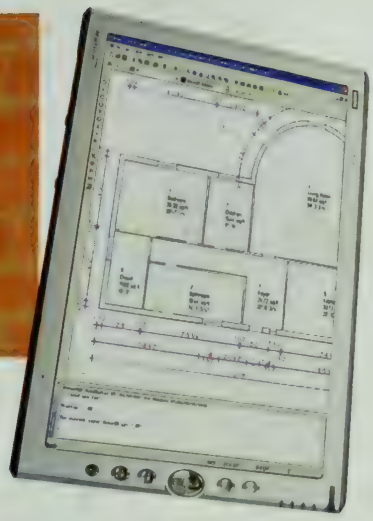


Through either a Web browser or a desktop interface, Xdrive gives users a place to back up, store, and share critical data online.

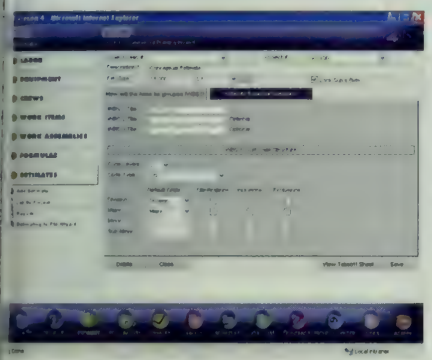
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handheld Leica DISTO and a PC
ith a Bluetooth device are all
ou need to create as-built draw-
gs with PowerCAD SiteMaster.



Corecon has released an architect-specific version of its estimating and project-management software.

PowerCAD SiteMaster/Leica DISTO Plus
GiveMePower/Leica Geosystems
www.givemepower.com or
www.leicaus.com
Windows only

Two companies have teamed up to sell a combined software/hardware solution that automates the creation of as-built floor plans using wireless technology. Laser measurements are collected with the Leica DISTO device; the spatial information is communicated via a Bluetooth connection to a Pocket PC, tablet PC, or laptop computer, where the PowerCAD SiteMaster software transforms the information into AutoCAD-compatible drawings. The companies say the system can be operated by a single person and is capable of producing as-built floor plans from site measurements up to 10 times faster compared to conventional methods involving those lowly low-tech tools: measuring tapes, paper, and pencil.

Corecon 4.0
Corecon Technologies
www.corecon.com
Windows only

Once geared to the contractor community, this Web-based estimating and project-management software now offers a customized package for architects and engineers, which is geared to small and midsize firms. It offers several productivity and management tools, such as online time-sheet entry; task scheduling; and tracking of proposals, leads, team members, and expenses and hours on projects under way. Users can set up the software's desktop to obtain at-a-glance project information, such as unfinished tasks or dollars expended. ■



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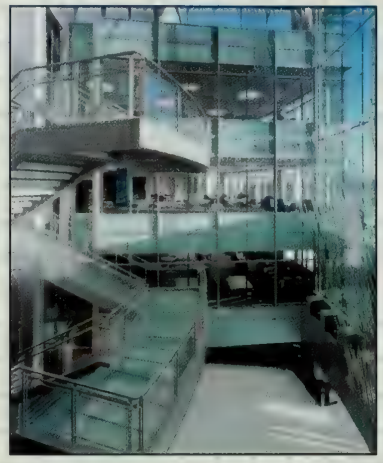
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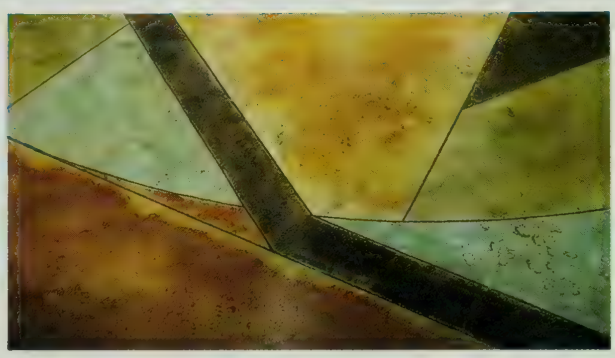
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CONTINUING EDUCATION Section: December 2004

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ard surface flooring

day's hard surface floors are drawing eyes downward with new materials,
tures and colors that not only demand admiration, but also provide enduring
ue for a variety of applications. After reading this article, you will be familiar
h the trends in hard surface flooring materials, have a better sense of the
ious applications for hard surface flooring and understand how flooring
terials can impact the client's cost of ownership. ***Page 243.***

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n Glass Studios, The Noble Company, Viva Ceramica, Wilsonart Commercial Flooring.



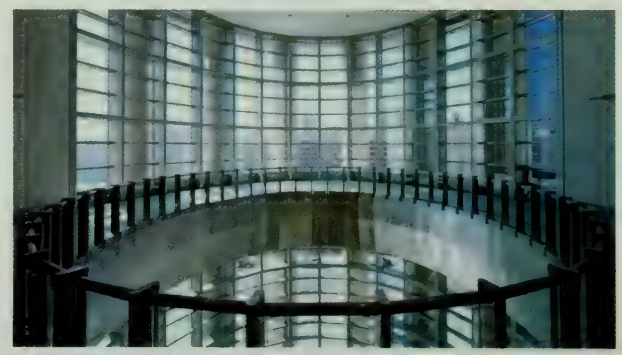


Improving project performance and productivity: The coordination and completeness of structural construction documents

Proper coordination of information between design and construction professionals resulting in coordinated drawings that are complete for construction has the greatest impact on project quality and cost. After reading this article, you should be able to recognize the value of the coordination of construction documents, identify the process required to generate coordinated and complete construction documents, understand the role of the architect in the provision of coordinated and complete construction documents, and be motivated to encourage the use of the CASE 962D Guideline in projects. Sponsored by the Council of American Structural Engineers, in conjunction with the American Institute Of Steel Construction, Inc. ***Page 273.***

esigning for security:
lass technology for blast protection

order to be prepared for a blast event, risk assessment and planning must be
mpleted far in advance and protection needs to be in place at all times. After
ading this article, you should be able to understand how laminated glass with a
olyvinyl butyral (PVB) interlayer can be used in the design of a building to protect
at building, neighboring buildings and their occupants in the event of a bomb blast,
cognize the situations in which a bomb blast risk assessment should be conducted
ior to the design of a building or prior to the retrofitting on an existing building's
indows, and understand the dynamics of a bomb detonation and the impact of
mb fallout on a building's structure. Sponsored by Solutia Inc. and Viracon. ***Page 261.***





The art and science of good ventilation

Today's homes are built tightly, which makes them more energy efficient. The emphasis on energy efficiency, however, has led to another unexpected result: new homes are experiencing air quality problems unknown to older buildings. After reading this article, you should be able to understand why ventilation in the home is more important today, identify the components of systems that ensure good indoor air quality, and design to achieve good indoor air quality. Sponsored by Broan-NuTone LLC. ***Page 267.***

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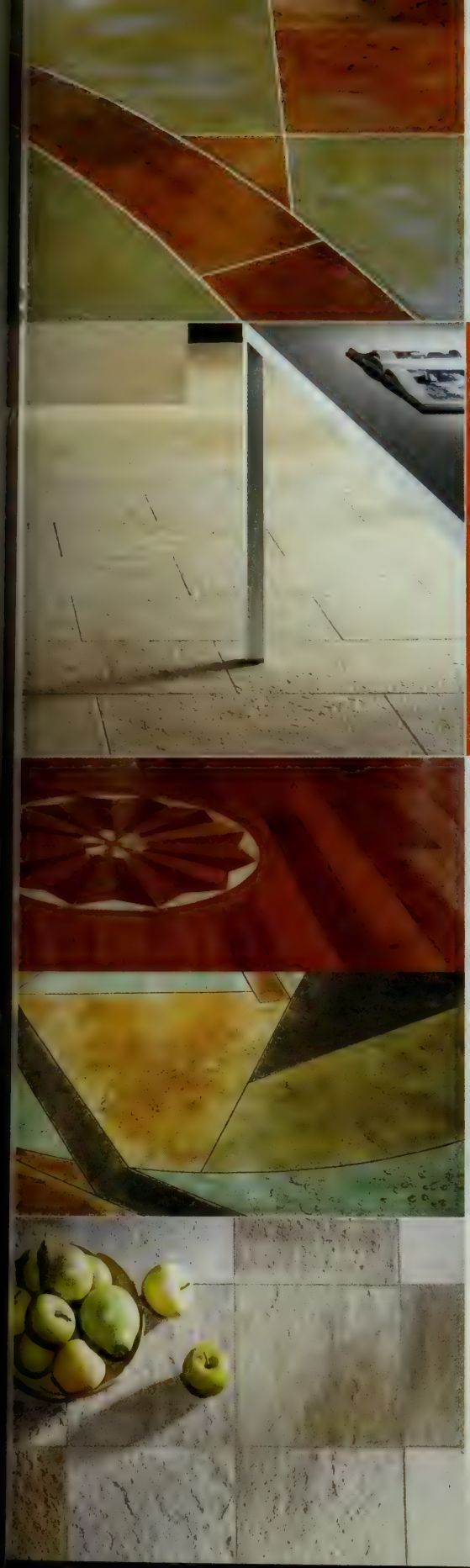
Learn more about **The FloorMuffler™** at www.floormuffler.com or phone us at 1.800.440.6008. Please visit us at Surfaces 2005, Booth G1301, in Las Vegas, January 26-28.

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Hard surface flooring:

New materials are driving big changes underfoot

INSIDE

244 Hard surface flooring
Continuing Education Section
258 Product review

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Hard surface flooring:

New materials are driving big changes underfoot

Where are you right now? In your home, the office, a restaurant having lunch? How did you get there? What did you see along the way?

You might have noticed the new trees in the park that outline the fountain. Maybe you enjoyed the way your office windows bring light into the entire room as you walked to your desk. Or maybe you were pulled into the restaurant by its walls that are reminiscent of a café you enjoyed while in Paris. Did you notice the tile underfoot as you walked into the restaurant? Or the stained concrete in your office atrium?

Each day when we're stepping up, putting our best foot forward and even toeing the line, we expect to be supported at every stride. But how often do you look down, regard and ponder what's underneath you? And how often does the flooring you chose take center stage in your design?

All too often flooring takes an understudy role to those features that make people look up in awe. In many projects flooring is the first budget cropped, with teams opting to minimize initial building costs by using flooring materials that ultimately maximize the client's long-term cost of ownership. But today's hard surface floors are drawing eyes downward with new materials, textures and colors that not only demand admiration, but also provide enduring value for a variety of applications.

A clean approach

Nowhere is the need for texture, color and value so evident as in the healthcare industry. It's more than medicine that heals. A patient's environment plays an important part of shaping their attitude and will. Faced with strict air quality and cleanability standards since sterile conditions must be easily maintained, designers sometimes can find their choices restricted in their drive to create a healing atmosphere.

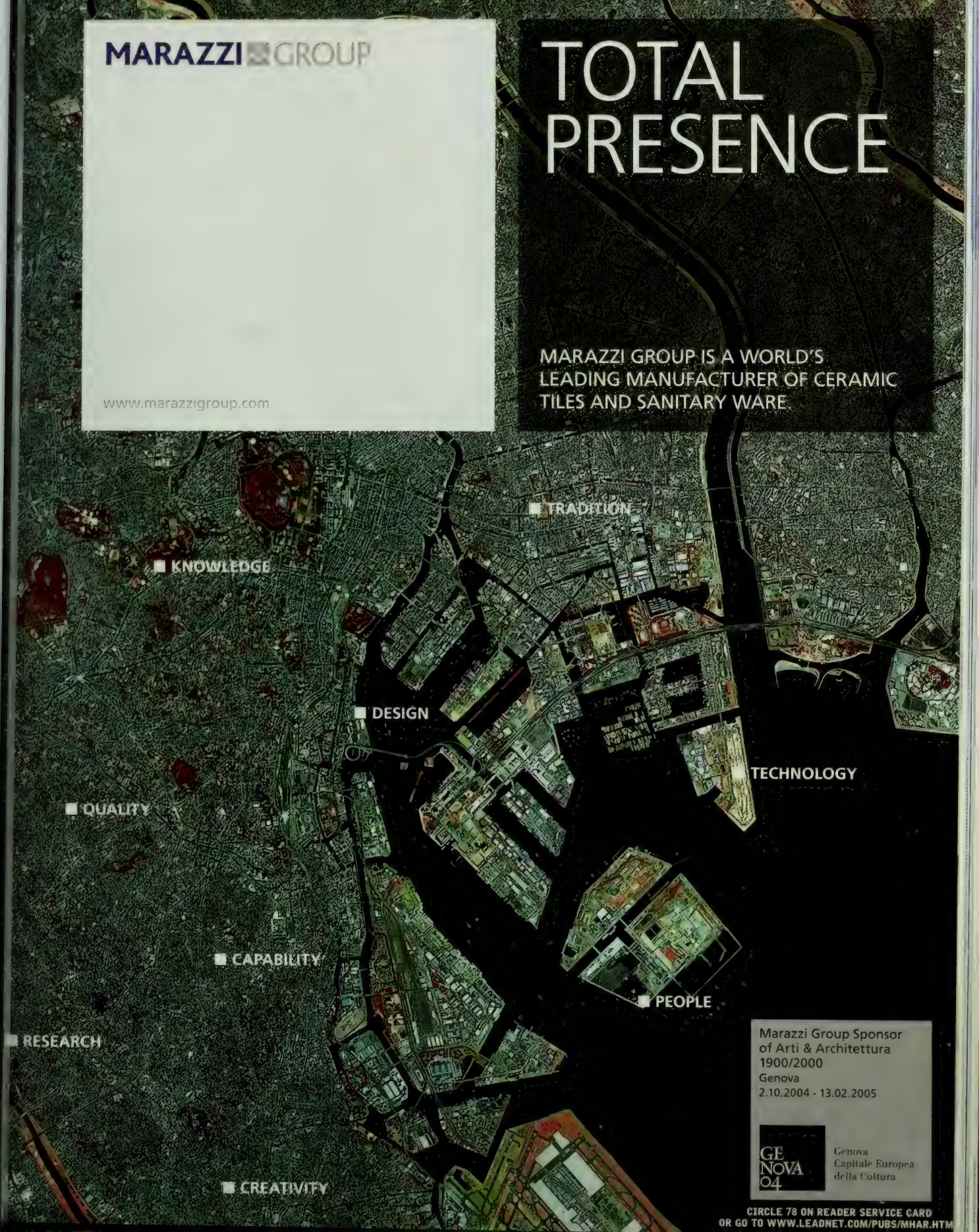
CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Hard surface flooring: New materials are driving big changes underfoot.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 256, then follow the reporting instructions on page 326 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Be familiar with the trends in hard surface flooring materials*
- *Have a better sense of the various applications for hard surface flooring.*
- *Understand how flooring materials can impact the client's cost of ownership.*


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Glazed porcelain tile. Courtesy Marazzi Tile.

Such was the case with the new oncology clinic in Poland. The architect was aware that patients and their families are in the facility during one of the most difficult times in their lives and wanted to make it as vigorous and encouraging as possible. In order to energize the facility while providing durability, the architect selected glazed ceramic tile. The colorful tiles are laid in an intricate celestial design that creates visual interest plus offers the unique properties of allergen-free wear and cleanability.

Not all ceramic tile is created equal though. Over the last several years there have been advances in firing and glazing techniques, resulting in different types for different uses from institutional grades to luxurious tiles for the most exclusive applications. According to Andrea Cacciari, Vice President, Distributor Sales and Marazzi Tecnica, American Marazzi Tile, Sunnyvale, Texas, advances include:

- ***dry glaze application methods that vastly enhance the aesthetic variations in tile***
- ***development of silkscreen applications for glazing tile***
- ***origination of abrasive tile to reduce slip-fall accidents and make safer environments***
- ***rotocolor application of glaze to produce intricate, ever-varied patterns***
- ***development of through-body porcelains in which color and pattern of the tile surface extends through the entire body of the tile***

The advancement used to create the tile in this clinic resulted in a material that is completely inert. The tile is glazed while still in the kiln, where it fully adheres to the body, creating a dense, homogeneous layer of glaze that is virtually non-porous. This is important in creating a sanitary environment because pore-free surfaces virtually eliminate staining and the retention of bacteria. And for the maintenance staff, cleaning requires only water and commonly available soapless detergent.

"Generally, it is a healthcare environment that requires ease of maintenance, durability, chemical and mold resistance and allergen-free materials," says Cacciari. "Ceramic tile eliminates concerns about out-gassing, allergens, bacterial growth and repeated maintenance cycles of stripping and refinishing."

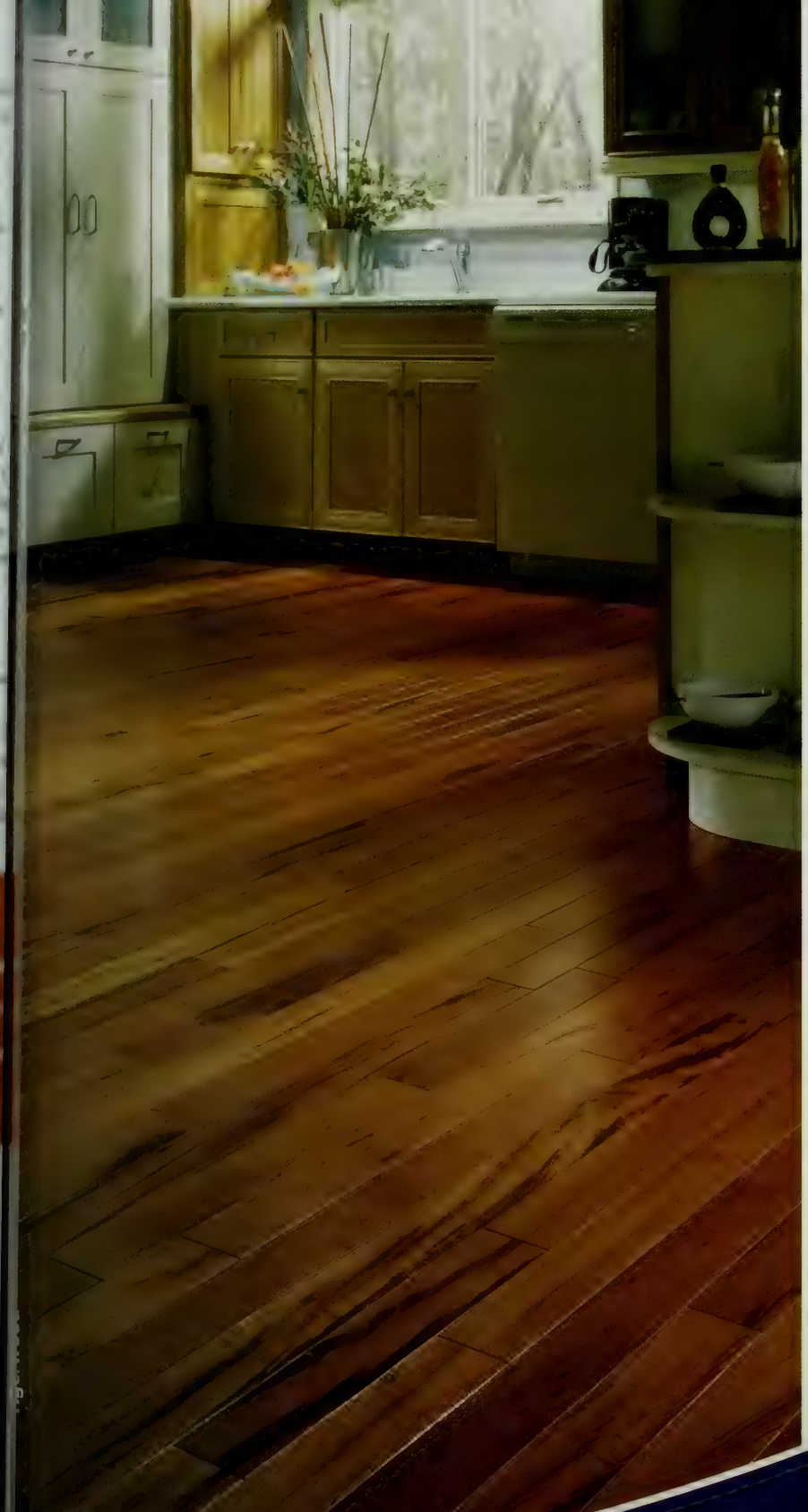
Overall, hard surface flooring is preferred over other types of flooring such as carpeted surfaces for sanitary environments due to faster cleaning and drying times. In addition, advanced grip finishes eliminate the concerns for slip-and-fall injuries. An added bonus, a recent study evaluating a 50-year life cycle cost put ceramic floor tile, mortar set, at just $13.56 per square foot. This compared to carpet tile at $99.62 per square foot.

Proven materials, new applications

It may be beneath your feet and you don't even know it. That's because concrete is taking on a whole new look. This is not your father's concrete. It's become a chameleon, changing colors and textures to serve diverse applications. In a restaurant it may be formed to look like rich, dark hardwood floors; in hotels it make take the form of sleek marble tiles, but all the time providing durability for even the highest foot traffic areas.

Concrete has been used in California since 1915 as a flooring material and was used in all the homes of the major movie stars throughout the building boom in the first half of the 20th century.

Long used as flooring in warmer, southern climates, concrete's durability and versatility is driving the material north, particularly the Northeast, to diverse commercial and residential projects. "Concrete has been used in California since 1915 as a flooring material and was used in all the homes of the major movie stars throughout the building boom in the first half of the 20th century," says Sherry White, Scofield Director of Corporate Communications, Los Angeles, Calif. "It's also been essential in retail design, especially large stores that elect to color and finish the actual structural slab, which saves considerable time and money. It provides exceptional durability to the hundreds of thousands of people who walk across the floors every year." Having the concrete colored throughout ensures color consistency if ever a chip or gash should occur.



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Stained concrete floor. Courtesy L. M. Scofield.



Fantastic effects can be created when various methods of coloring concrete are combined. Courtesy L. M. Scofield.

In a recent study that examined flooring's initial costs and life cycle costs, colored concrete flooring came in at $5 to $8 per square foot, as compared to slate at $35 to $50 per square foot and marble at $20 to $60 per square foot.

With a considerable wide range of colors already available, concrete color can be custom-blended to match specific client's needs, adding to its versatility. In addition, new grinding and polishing techniques help to bring out rich colors of integrally colored concrete. Grinding and polishing darkly colored concrete can result in a surface resembling polished stone. Reds tend to appear as burgundy slate and black looks like granite.

In addition to design benefits, concrete has several environmental pluses. White adds that the fact that there is no out-gassing and nothing carcinogenic within the material makes it appealing to architects concerned with indoor air quality and sustainable construction issues. Concrete advocates are also noting that when you cover concrete with other materials such as carpet, you're unnecessarily consuming resources and energy. Using concrete eliminates that waste.

Colored concrete was the only option a church in Evergreen, Colo., would accept. This popular church wanted flooring to support its weekly congregation — along with the more than 5,000 people who attend its many jazz music festivals—for years to come. The solution was to sandblast the existing floor to its substrate then relay the surface, which is designed to look like raw silk. There are two essential options for colored concrete—either color the entire slab upon pouring or provide color on the surface like they did here. The second option is ideal for retrofit situations. To provide special effects to concrete, these penetrating stains can also simulate the shadings of natural stone or create artistic faux finishes. Such stains become part of the surface and will not fade, chip, crack or peel.

What about the acoustics in this vaulted ceiling church with a hard surface floor? It's a bad rap put to all hard surface flooring. "You really just need to put thought into your soft surfaces," White says. "This church is designed to serve as a musical arena and the concrete plays its part."

White reminds that proper sealing and waxing are essential to maintain the floor's appearance and durability. Sealers are color-matched to the concrete's color. They can improve appearance and enhance depth and uniformity of color while offering an easy-to-maintain, low-gloss finish resistant to staining, abrasion, many chemicals, weather, deicing salts and UV radiation. Some of these coatings chemically bond with the concrete to make it even stronger.

"Just before the church opened its doors for its latest jazz festival, they waxed the floors. The day after the festival, you couldn't tell that 5,000 people had walked over it just a day earlier." According to White, each application is different and foot traffic will determine just how much maintenance is needed on a particular project.

Creating a clear walkway

We all know what happened when Alice stepped through the looking glass, but what would happen if she could walk atop it? New technologies in cast glass are making it happen.

Entry floors, lobbies, casino walkways, stair treads and elevated surfaces are just some of the recent installations with which Barry Allan, Director of Nathan Allan Glass Studios, Inc., of Richmond, British Columbia, has been involved. "Cast glass flooring is cutting edge material that has not been duplicated and produced many times over. Some architects cannot believe that glass products can be walked upon," he says, noting that most of the clients he's

We all know what happened when Alice stepped through the looking glass, but what would happen if she could walk atop it?



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Faux finish cast glass. Courtesy Nathan Allan Glass Studios.

worked with are among the first ever to use cast glass flooring.

Of course, like many of its hard surface compatriots, glass isn't always as it appears. Available in a range of colors in transparent or matte finishes, glass can also take on a number of different textures, resembling aggregate, sandstone or even lava. Each look creates a unique experience in light and reflection for each pedestrian.

As cast glass is non-porous and does not absorb grease, dirt or fingerprints, it is easy to clean and durable. Like many hard surface materials, safety is often an issue. Gripping surfaces imbedded in the product elevate the shoe tread off the glass, not only preventing slipping, but also reducing scratching as it elevates the shoe treads off of the glass. Allan describes the approach as "glass sandpaper," and it offers see-through treads while providing a safe walking surface.

For architects looking for a green approach, Allan offers some caution to claims about recycled glass used in flooring. "Recycled glass is not used in the flat glass industry. Broken glass can be used when the product is liquefied, but if there is a compatibility issue, the glass cannot be tempered and classified as safety glass," he said. "In projects where recycled product is mandatory, it would be advisable to request from your supplier a letter that states the flat glass product being used is developed from recycled glass. Also request information from other sources to back up claims."

An exotic experience

Looking for something new for that commercial office project? Maybe "Amendoim," with its reddish-brown hue and wavy grain pattern, is the right fit. How about "Purpleheart," with its deep purple to purplish brown coloring? Or perhaps "Wenge," with its chocolate brown and gold grain.

What is this material with the mysterious names? It's actually exotic hardwood flooring and it's been coming on strong in both the commercial and residential markets in recent years. "New varieties of woods together with high-quality engineered grades have revolutionized the hardwood flooring market," says Steve Wagner, Creative Director, Black Rock Communications, Darnestown, Maryland. "New technologies enable architects to carry their designs throughout a project, from basement to penthouse."

The familiar North American maple, red oak and cherry have a strong tradition in flooring, but exotic hardwoods are providing a broader palette for designers. For example, when Michael Harris Homes of Vienna, Va., wanted a unique look for their model homes at an upscale golf community, they selected Brazilian cherry prefinished flooring over the standard oak, which is popular in the mid-Atlantic region. The plank is a wide, three-inch width, which results in elegant, sophisticated country warmth that works throughout the entire house.

New varieties of woods together with high-quality engineered grades have revolutionized the hardwood flooring market.

A benefit of exotic hardwoods is that unlike stained floors, where color is applied on top, the color of exotic hardwoods is uniform throughout, mitigating gashes and dents. But gashes and dents seem unlikely, given that exotic hardwoods are typically harder and therefore more durable than domestic varieties. Hardness is tested by the Janka Hardness system, which evaluates the pounds of pressure required to embed a 0.444-inch-diameter steel ball one half of its diameter into the wood. According to the U.S. Forestry Lab using this system, Brazilian walnut requires 3,680 pounds per square inch of pressure versus American cherry that requires just 950 pounds per square inch of pressure. According to the Janka Hardness system, most common, domestic wood species fall at the lower end of the hardness spectrum.



Concrete and cementitious toppings are increasingly popular in office, retail and restaurant environments because of the advantages in durability, value, reduced maintenance and environmental considerations. Courtesy of L. M. Scofield

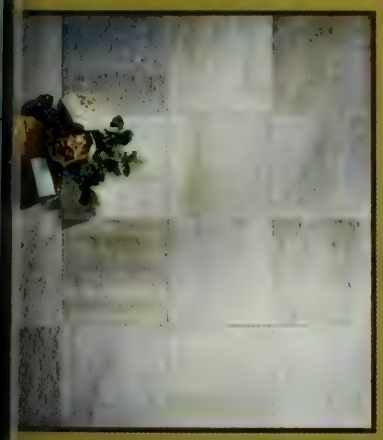
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Advances in engineered flooring enable the hardwood design to continue through areas once forbidden, including bathrooms, kitchens and subterranean floors. "Engineered floors together with new adhesive technologies enable the flooring to be installed throughout an entire project—interchanging the best material for each location," says Wagner. "For example, new adhesives enable the flooring to be installed directly on concrete, saving time and money."

Maintaining both engineered and exotic hardwoods usually requires commercial spray cleaners or damp mopping, making them simple to clean. Planks that are damaged can be easily replaced individually without needing to resurface or refinish the entire floor.

When examining any exotic hardwood products, Wagner advises to take a hard look at the manufacturer with regard to environmental responsibility. "There are a lot of things to consider when specifying a project, but I think it's most important when using exotic woods to make certain you're working with a product produced by a company committed to reforestation and responsible extraction," he said.



Laminate flooring. Courtesy Wilsonart Commercial Flooring.

Luxurious laminates

There's something about laminate that sends minds wandering back to classic 1950s designs. Think again. Today's styles, durability and easy maintenance are anything but retro. And you'll find them everywhere—from operating rooms and cafeterias to night clubs and five-star hotels. New products embrace transparency and light reflection, such as that found in ceramic glazing. Other laminates capture the essence of natural stone in both its polished and rough-and-tumble states. Still others convince you that you're strolling across a woodgrain plank floor. Have your own design? All you need to do is bring in your images, artwork, photographs or illustrations and laminate can be created to match.

While the diverse styles can help you lay whatever path you choose, knowing the construction behind laminates will help you select the right type for your application.

More and more specifiers are looking for products that install quickly, have low maintenance requirements and are extremely durable.

Fundamentally, there are two types of laminate flooring: high pressure laminate (HPL) and direct pressure laminate (DPL) flooring. HPL flooring consists of a piece of core sandwiched between two pieces of high pressure laminate. DPL flooring has a core sandwiched between two layers of paper and a sheet of melamine. The differences between HPL and DPL flooring products are quality, performance and price. HPL is produced under 1,200-1,400 pounds per square inch at 350 degrees F. for 25-35 minutes before cooling, resulting in a significantly increased static load rating, as well as superior impact resistance. HPL products also have superior chip resistance, making them a good option for most commercial applications. DPL products are produced under 300-500 pounds per square inch for 15-30 seconds. DPL products are more appropriate for light residential applications and include most laminate flooring products sold at home centers.

"More and more specifiers are looking for products that install quickly, have low maintenance requirements and are extremely durable," says Randy Phillips, Sales Manager, Wilsonart Commercial Flooring, Temple, Texas. "If properly installed and maintained, quality laminate flooring products will look as good as the day they were installed for quite some time."

Proper installation is imperative to long-term cost savings. For example, one of the innovations that changed the laminate industry was the creation of glueless technologies. While offering quicker installation, this technique isn't appropriate for all projects. "We know that the rigors of commercial installations require a stronger, tighter joint than most glueless products can deliver long term," Phillips says. Glued floors also allow installation in certain healthcare applications where glueless floors can't be installed due to moisture resistance issues.

Most laminate manufacturers insist that life cycle costing is very important in the selling cycle of laminate flooring due to the low maintenance requirements. Most commercial grade laminate flooring products will install in the $6.00 to $9.50 per square foot range. This pricing is not inclusive of floor preparation and moldings.

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It adds up

Recent industry studies have determined that over the life cycle of flooring, products with lower initial costs did not remain cheaper than products with higher initial costs. Over a 15-year timeline, it was shown that products with a higher initial cost were the products that were less expensive overall. But remember, there is no flooring product that is suitable for every application.

"It is very important for architects to look not only at initial costs of materials and installation, but also to consider savings that stem from eliminating or slowing down the need to replace structural components over the life of the installation," says Cacciari.

Although ceramic tile and stone is attractively priced, the real value of an installation is recognized over many more years of serviceability.

Consider the example of ceramic tile versus carpet. You need to analyze initial cost of the product, number of times the product must be replaced during the life expectancy of the installation and cost of maintenance over the lifetime of the installation. Studies have shown that although the initial cost for installed tile is higher than for installed carpet, the carpet will have to be replaced multiple times during the life of the installation, thus yielding a higher life cycle cost. You also need to factor in loss of use costs to a commercial facility incurred while carpet is being replaced during business hours or the premium cost of labor if being done after business hours.



Stone tile. Courtesy Florida Tile.

"Although ceramic tile and stone is attractively priced, the real value of an installation is recognized over many more years of serviceability," says John Turner, Sr., General Manager, Commercial Sales/National Accounts for Daltile, Dallas, Texas. "A ceramic or stone installation, installed properly and maintained properly will last many decades. The choice to remove and replace such an installation in future years will be more of a design decision than a decision necessitated by lack of performance." Turner reminds us of the various orange, olive and tan decors of the 1960s and 1970s that were replaced for fashion instead of function.

So what questions should be asked when considering hard surface flooring? Joseph Patterson, Director of Commercial Sales for Florida Tile, Lakeland, Fla., suggests six areas to consider. "When you investigate your choices it's easy to prioritize when you group your requirements into six areas: aesthetic appeal, safety, maintenance, stain resistance, traffic and wear, and cost." Some points to discuss include:

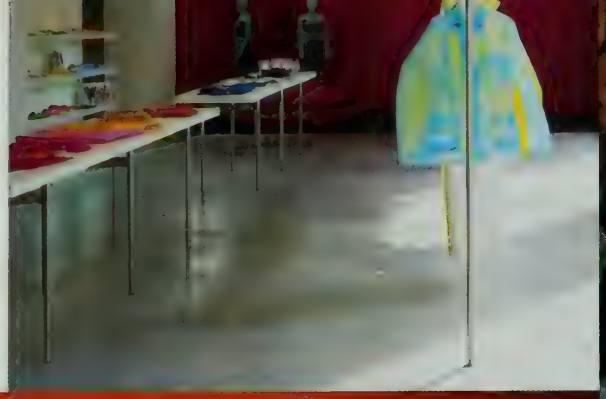
- ***What is the expected foot traffic?***
- ***What is the expected life of the floor substance?***
- ***Will the material perform in the climate?***
- ***Is the color range offered by a product line acceptable?***
- ***How easy is it to clean?***
- ***Will it maintain its appearance over time?***
- ***Does the product contribute to energy savings?***
- ***How does the material perform in terms of fire and heat protection?***
- ***Is the material slip resistant?***
- ***Does the material have the flexibility to work with the facility's design and is it adaptable to future design?***

According to Turner, you'll also want to examine the resources the material manufacturer offers, such as technical expertise and support, production capacity and distribution availability. "If you're designing a national or international chain of restaurants you'll want to work with someone who has the capability to deliver what you need when and where you need it—no matter what," he says.

Laying a path to the future

Residential, commercial and industrial venues are showing a continued increase in the specification of hard surface flooring. "While I can't predict the future, as baby boomers age, I see continued expansion into the retirement and healthcare environments," Cacciari says. Also, as buildings age and require facelifts, there is more interest in retrofitting with pre-figured systems that accommodate computer cabling, ductwork, power lines, security systems or cubicle walls installed with conventional floor systems.

"The industry has gone through a revolution in the past 15 years," Patterson says. "We are now part of the fashion industry. Public awareness and growth of this industry has been steady on the upward tic." According to Patterson, not so long ago the choices in





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hard surface flooring were very limited in scope with monochromatic size and color. Now there is a plethora of choices with an array of sizes and shapes taken from ancient to modern art.

On the residential front, hard surface flooring is no longer relegated to just certain areas. The U.S. market is adopting the European tradition of hard surface materials throughout the home because of their durability and availability in so many finishes that replicate other materials without the high cost and maintenance requirements.

Next time you step off an elevator, walk up a flight of stairs or simply walk through a door, take a look around and down. Regard th palette of tile, concrete, glass, laminates and hardwood that makes every one of your steps possible. ■

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LEARNING OBJECTIVES

After reading this article, you should be able to:

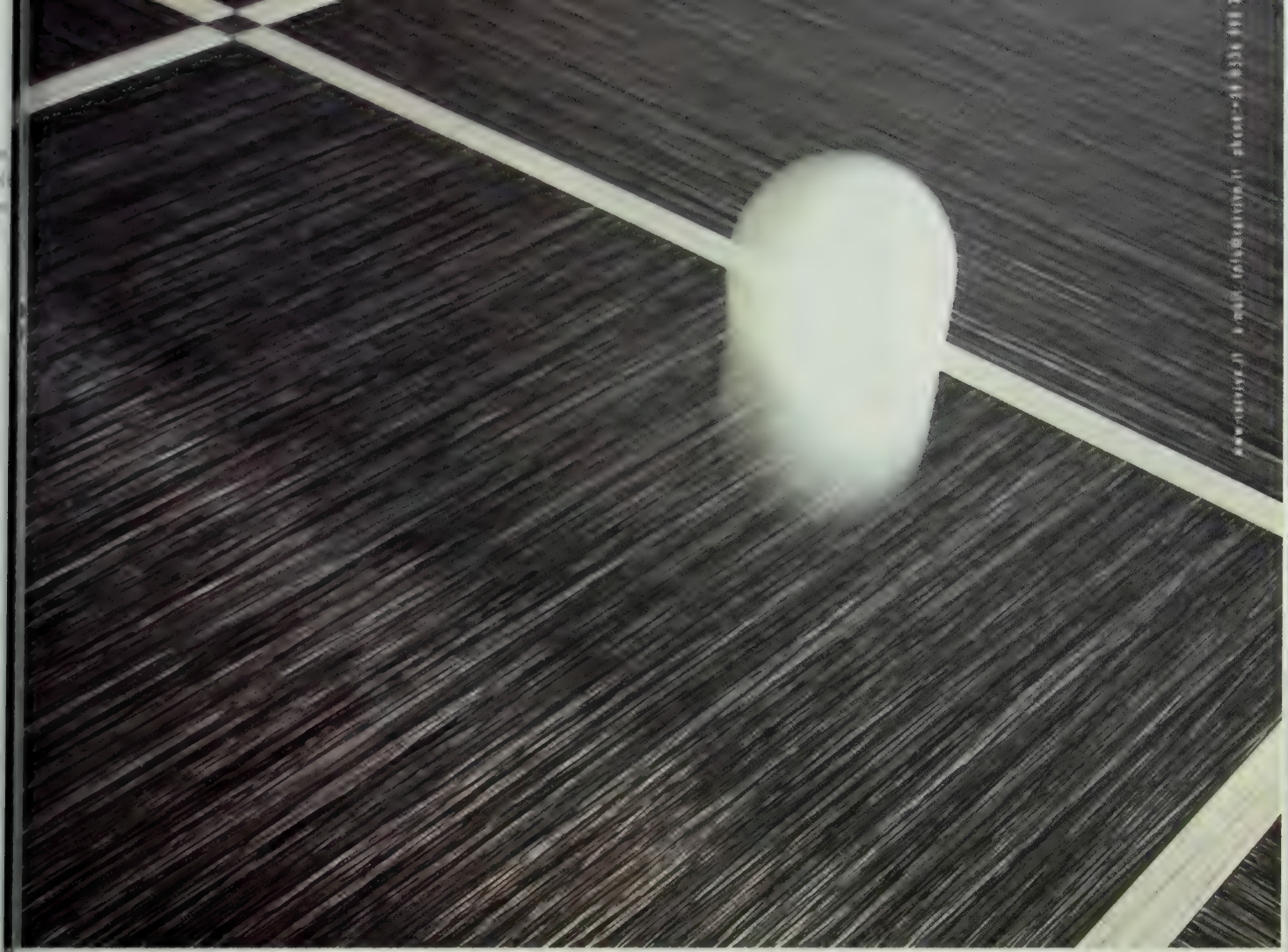
- *Be familiar with the trends in hard surface flooring materials*
- *Have a better sense of the various applications for hard surface flooring*
- *Understand how flooring materials can impact the client's cost of ownership.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 326. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

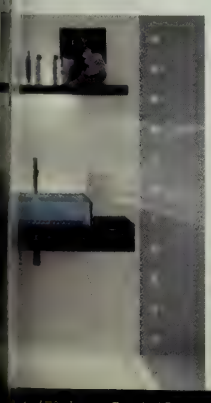
1. Over the life cycle of flooring, products with lower initial costs did remain cheaper than products with higher initial costs.
 - **a.** True
 - **b.** False
2. According to recent studies, what type of flooring surface offers faster cleaning and drying times?
 - **a.** Hard surface flooring
 - **b.** Carpeted surface flooring
 - **c.** Painted surface flooring
3. Name the inherent benefit(s) of concrete flooring:
 - **a.** Durability
 - **b.** No out-gassing
 - **c.** Versatility
 - **d.** All of the above
4. What technique can help concrete appear as other materials?
 - **a.** Stripping and refinishing
 - **b.** Polishing and grinding
 - **c.** Washing and waxing
5. What areas should be considered when choosing flooring material?
 - **a.** Durability
 - **b.** Safety and performance
 - **c.** Flexibility
 - **d.** All of the above
6. Pore-free surfaces virtually eliminate staining and the retention of bacteria.
 - **a.** True
 - **b.** False
7. In a recent study that combined flooring's initial costs and life cycle costs, which of the following flooring materials was the least expensive?
 - **a.** Marble
 - **b.** Slate
 - **c.** Concrete
 - **d.** Carpet
8. What type of flooring is produced under 1,200-1,400 pounds per square inch at 350 degrees F. for 25-35 minutes before cooling?
 - **a.** Glazed ceramic tile
 - **b.** Engineered wood flooring
 - **c.** High pressure laminate
 - **d.** Concrete
9. The Janka Hardness system is used to test the hardness of what material?
 - **a.** Concrete
 - **b.** Laminate
 - **c.** Wood
 - **d.** All of the above
10. What is Wenge?
 - **a.** Type of cast glass
 - **b.** Color used in glazed tile
 - **c.** Brand of laminate
 - **d.** Type of exotic hardwood



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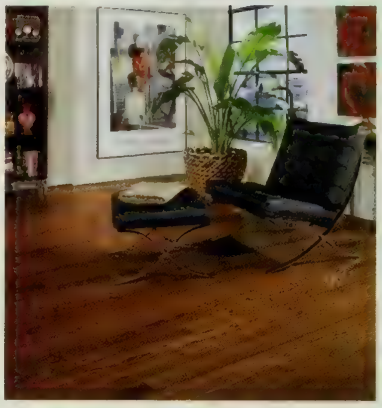






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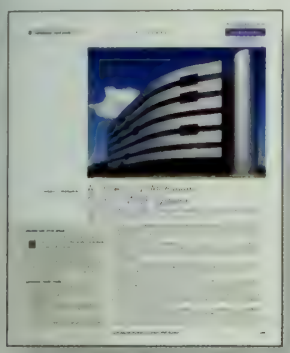
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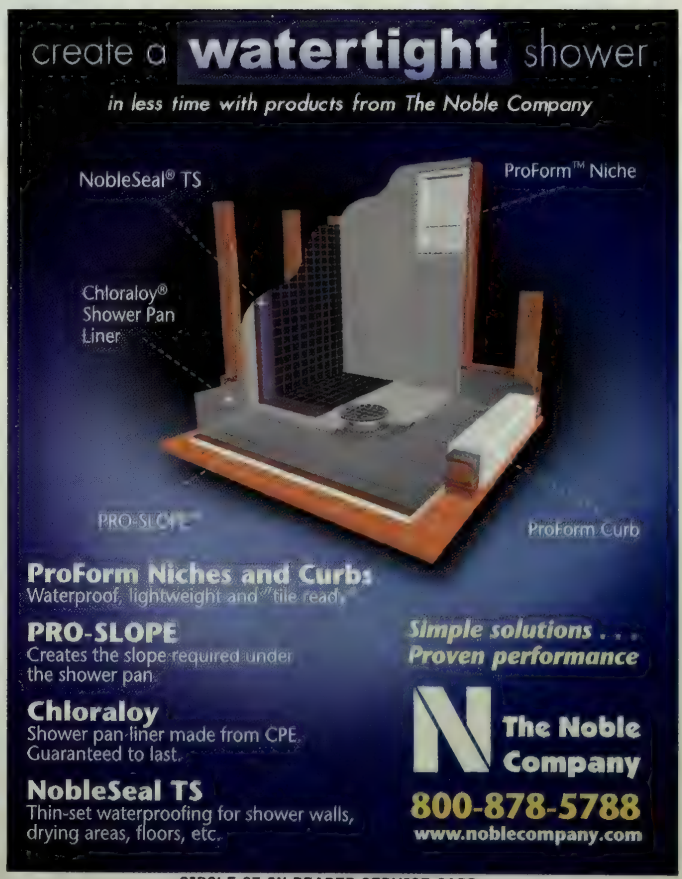


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Designing for security: Glass technology for blast protection

Eagleton Federal Building, St. Louis
Photography: Tim Parker

n recent years, the bomb has become the weapon of choice for terrorists. Since the early 1990s, several significant bomb attacks have occurred that directly affected the U.S., including the bombings of the U.S. embassies in Africa, the Alfred P. Murrah Federal Building in Oklahoma City, and the ld Trade Center. These and other attacks have heightened concerns about security buildings provide to their occupants and neighbors. In most bomb cks, structural damage and broken windows constitute major causes of death and injury for occupants of the targeted and surrounding buildings.

Unlike naturally occurring destructive events like hurricanes, a bomb blast cannot be reacted to with significant warning, and there is virtually no time between recognition and reaction. In order to be prepared for a blast event, risk assessment and planning must be completed far in advance and protection needs to be in place at all times.

Although no single product offers complete protection, laminated glass windows and doors made with a polyvinyl butyral (PVB) interlayer can be a critical first line of defense, because the glass tends to remain in its frame, thereby helping to protect the interior of the building from the blast wave effect of energy which causes the majority of damage to a building's interior and surrounding buildings. Protection from flying glass is equally imperative, because as studies of bomb explosions indicate, more than 75 percent of the injuries caused by bomb blasts are glass-related.

Laminated glass with a polyvinyl butyral PVB interlayer can be installed easily during the initial construction of a building and, in many cases, can be installed as a retrofit system for established facilities. Laminated glass with a PVB interlayer is virtually invisible to occupants and outsiders.



Structural damage and broken glass were major contributors to death and injury for both the targeted buildings and the surrounding area in the 1995 bombing of the Murrah Federal Building in Oklahoma City.

ITINUING EDUCATION

CATION

Use the learning objectives below to focus your study as you read **Designing for security: Glass technology for blast protection.** To earn one AIA/CES Learning t, including one hour of health safety welfare credit, wer the questions on page 265, then follow the orting instructions on page 328 or go to the Continu- Education section on *archrecord.construction.com* and ow the reporting instructions.

ARNING OBJECTIVES

r reading this article, you should be able to:

Understand how laminated glass with a polyvinyl butyral (PVB) interlayer can be used in the design of a building to protect that building, neighboring buildings and their occupants in the event of a bomb blast.

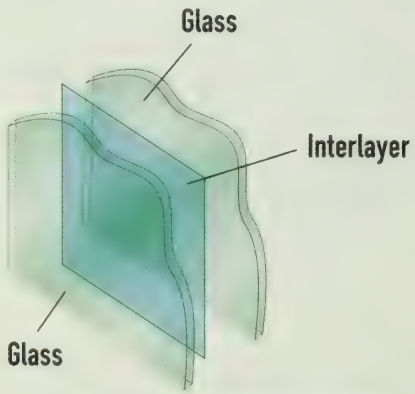
Recognize the situations in which a bomb blast risk assessment should be conducted prior to the design of a building or prior to the retrofitting on an existing building's windows.

Understand the dynamics of a bomb detonation and the impact of bomb fallout on a building's structure

Terrorist attacks and glazing affects

Recent events such as the September 11 attacks and the Oklahoma City bombing have dramatically heightened the need for increased security at all high-risk buildings. According to a published study by the Glass Research and Testing Laboratory at Texas Tech University, the leading cause of injury in the Oklahoma City federal building bombing was flying glass. In fact, it was estimated that of the hundreds injured in the bomb blast, 80 percent suffered glass-related injuries. To compile their study, University researchers visited the Oklahoma City bombing site immediately following the disaster. During their inspection, the investigative team found glass strewn over an area encompassing six miles to the north of the Alfred P. Murrah Federal Building, one mile to the south, and one mile on either side in downtown Oklahoma City. Shards of glass were even found embedded in walls and inside the buildings surrounding the site.

The researchers' key findings, however, came while investigating how different types of glass products behaved during the explosion. While most glazing systems used in the downtown area of Oklahoma City in close proximity to the detonated bomb were completely destroyed, laminated glass windows and doors made with a polyvinyl butyral (PVB) interlayer performed better than any other glass type found. Having the glass stay in the frame helped protect the surroundings from additional amounts of falling and flying broken glass.



Laminated glass consists of a tough protective PVB interlayer which is bonded between two pieces of glass under heat and pressure.

During a bomb blast, ***laminated glass with a PVB interlayer helps to diminish the effects of the explosion by allowing the interlayer to stretch and in essence absorb some of the energy generated by the blast***. If the glass breaks, the ***PVB plastic interlayer in laminated glass tends to hold the broken fragments in place helping to prevent glass-related injuries and damage***. With the appropriate types of glass and installation in frames, laminated glass with a PVB interlayer helps protect the interior of the building from the blast wave effect. By retaining the building envelope, the blast wave does not enter the building and cause additional damage by hurling furniture, fixtures and collectibles around the interior environment—causing the majority of damage to a building's interior after an explosion. Unfortunately, laminated glass with a PVB interlayer was used in less than three percent of doors and windows in the Oklahoma City area affected by the blast pressure.

In their analysis, Texas Tech researchers concluded that damage to people and property in the Oklahoma City bombing could have been significantly reduced had laminated glass with a PVB interlayer been used exclusively in the commercial buildings surrounding the Murrah Federal Building. They also concluded that more emphasis should be placed on the design of a building's non-structural elements, especially glazed windows and doors.

The Oklahoma City bombing and other terrorist acts have led laminated glass with a PVB interlayer to be used and specified for many high-security buildings—including the $185-million Eagleton Federal Building located in St. Louis, Missouri, and the Las Vegas Federal Courthouse in Las Vegas, Nevada. In addition to using laminated glass in these federal buildings, the General Services Administration (GSA) announced that laminated architectural glass is among the products it recommends to provide bomb blast protection in all new construction and major renovations of federal buildings under their control. In fact, laminated glass was listed as a preferred system for use in federal facilities, as noted in a recent GSA release to the glazing industry, outlining information it had recently provided to regional offices "for planning purposes."

Las Vegas Federal Courthouse: One of first courthouses built after GSA standard introduced



Glazing Contractor: Enclos Corporation, Minneapolis, MN
Laminator: Viracon, Owatonna, Minnesota
Interlayer Manufacturer: Solutia Inc., St. Louis, Missouri
Architect: Dworsky Associates, Los Angeles, California
Blast Consultant: Weidlinger Associates Inc., New York, NY
Project Completion Date: Spring 2000

Photography: Wes Thompson

The Las Vegas Federal Courthouse, one of the first federal courthouses to be completed since the Oklahoma City bombing, blends an open and inviting glass facade with state-of-the art security measures. The building looks nothing like the fortress it is, and its designers say it could fare better through a bomb attack similar to the attack on the Alfred P. Murrah Building in Oklahoma City.

The 407,000-square-foot facility is located on Las Vegas Boulevard in the center of the downtown business district. The $97-million project includes 10 courtrooms, judicial chambers and various state offices. It is the first building to incorporate the federal government's new anti-blast design standards, which were developed after the Oklahoma City bombing.

The additional security measures, which include blast-resistant glazing and floors designed not to collapse on each other, added about $5-million, or 5 percent, to the overall construction cost for the building. The lead designer on the project used laminated glass with a polyvinyl butyral (PVB) interlayer in the curtain wall instead of the annealed glass used in Oklahoma City's Murrah Building.

In the Las Vegas Federal Courthouse, light flows through the two seemingly conventional double-glazed walls, which are actually unitized panels of aluminum frames and one-inch-thick insulated panes of laminated glass with a PVB interlayer. A glass dome tops the structure, which is also blast resistant. The General Services Administration (GSA) gave the designers a tall order — the new structure needed to protect the interior occupants from a terrorist's bomb — but left the execution of the assignment in the hands of the design team. Armed with the knowledge gained from Oklahoma City's massive glass damage, a blast-resistant curtain wall was designed, fabricated and installed to help heighten the level of protection for the building. The entire design team agreed that full-scale testing would be required, marking the first time a curtain wall was subjected to such rigorous blast testing. Two full-scale specimens were used for testing at the government's White Sands Missile Range in New Mexico. Two systems were tested using laminated glass with a PVB interlayer attached to an aluminum frame, and subjected to another test where the glass was attached to a steel truss framework.

The units are integrally connected to the building frame, rather than clipped on. Compared with the simple construction of the Murrah Building in Oklahoma City, the steel frame is more ductile and has greater energy dissipation capacity. Exterior design elements, such as landscaping and concrete barriers, are also designed to keep explosive laden vehicles from getting near the building.

Risk assessment

When considering protection for a building, the owners and architects can work with structural engineers and blast consultants to determine which threats they are trying to protect against. Terrorist threats range from large truck bombs to mid-size car bombs to small package or letter bombs, which can originate from inside or outside the building.

Not all laminated glass is the same, and the same glass configuration may not meet every facility's needs. For an installation where a blast hazard is suspected, a risk assessment of the facility should be completed prior to installation of any product. The risk assessment will encompass many areas that go beyond glazing, such as progressive collapse and site design.

To start, every project is unique. There is no industry standard, and the level of protection is determined by the building owner. After a risk assessment has been performed, the very difficult decision to balance the amount of acceptable risk with the amount of desired protection must be made. From a glazing standpoint, several key items need to be understood:

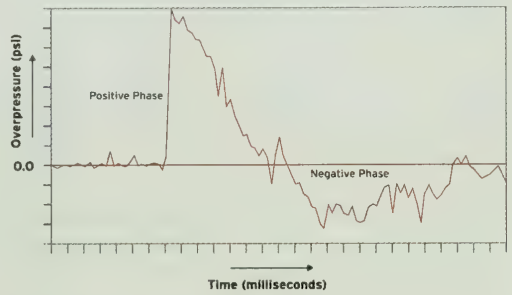
1. ***Amount of glass desired in structure***
2. ***Structural capacity of the glass (wind and/or snow load)***
3. ***Blast load determination***
4. ***Acceptable hazard level***
5. ***Stand off distance***
6. ***Life cycle of glazing product***
7. ***Solar control needs and aesthetic desire***

The trend toward increased amounts of glass in buildings coupled with the desire for added protection is not mutually exclusive. The developed glazing and framing techniques, along with structural and blast performance and long life cycle of laminated glass with a PVB interlayer, have given designers and engineers the capability to use more glass in buildings. Their desired or targeted protection levels can be established without sacrificing the comforting environment while still portraying the desired image.

Properties of glazing to resist bomb blast attack

The primary cause of glazing damage is the shock, or blast wave, that expands in all directions from the explosive charge. A secondary cause of damage is debris. The two main sources of debris are 1) the intentional missiles in the composition of the weapon such as nails, and 2) fragments from the surrounding environment such as rocks or pieces of the transport vehicle. To resist the damaging effects of a bomb attack, the glazing must be able to withstand both the primary blast event and the accompanying debris.

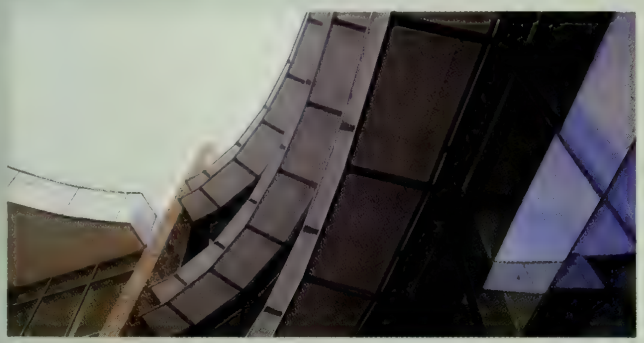
Typical Blast Wave
Incident (Side-on) Overpressure



Basic principles of a bomb blast

An enormous amount of energy is released when a bomb is detonated. After the detonation, ambient pressure increases almost instantaneously, and promptly begins to decay, forming a nearly triangular overpressure pulse. The highest load is called the peak positive overpressure, which represents the pressure seen at a point in space when the shock wave is unimpeded in its motion. The duration of the positive overpressure is called the positive phase duration.

Oklahoma City's new federal campus showcases blast-resistant glazing technologies



Sunlight streams into the new Oklahoma Federal Campus that replaces the Alfred P. Murrah Building destroyed in the 1995 terrorist blast, creating an uplifting vision of a future filled with hope and renewal. Photography: Brad J. Goldberg

Glazing Contractor: Masonry Arts Inc., Bessemer, Alabama
Laminator: Viracon, Owatonna, Minnesota
Interlayer Manufacturer: Solutia Inc., St. Louis, Missouri
Design Architect/Architect of Record: Ross Barney + Jankowski Architects, Chicago, Illinois
Associate Architect/Engineers: The Benham Group, Oklahoma City, Oklahoma
Blast Consultant: Weidlinger Associates, New York, New York
Project Completion Date: December 2003

The design of the 181,000 square foot, three-story building in the new Oklahoma City Federal Campus, embodies a balance between solidity and openness. The architect defined the disparity between these two concepts by contrasting street elevations of exposed concrete and punched windows with large areas of curtain wall at the angled southeast and northwest faces, and in a sweeping elliptical courtyard. Adding further to the seemingly contradictory terms of security and openness, concrete colonnades complete the urban rectangular footprint, separating the building from the street and creating physical and emotional security for the building occupants. The liberal use of glass in both the interior and exterior creates a warm and inviting space.

To resist blast loads, the architect chose galvanized steel as the structural framing components for the windows and curtain wall system. As for any landmark project, exhaustive research, testing and verification of performance was carried out before the final decisions on material type, installation methods and overall dimensions of products were made. After reviewing the products available, the designers determined that laminated glass with a polyvinyl butyral (PVB) interlayer and special framing system was their best option.

With the façade glazing requirements of the building met, the architects began to explore the use of glass in other spaces. Because the lobby space was somewhat small, the architects needed to create a welcoming environment for a building with such a significant emotional legacy. The answer came from above. To let light flow into the lobby from the dramatic skylights overhead, the architects designed two glass bridges that span the lobby airspace on the second and third floors. Armed with the expertise of the blast consultants on the project, a multi layer glass configuration strong enough to meet not only structural requirements, but able to withstand an explosion in the lobby below, was created.

One of the most important design challenges was finding a way to use glass in a distinctive way, while admitting only as much light as necessary and distributing it evenly throughout the space without introducing glare or heat. Most of the glazing in the building extends from floor level to ceiling at 11 feet above finished floor. A clever combination consisting of a high performance low-e coating with tinted and clear glazing was used. Viracon, the glass fabricator, provided a proprietary high performance low-e coating with a blue-green tinted glass, which extends from floor to eight feet to reduce glare in the workspace. At the eight foot level, a horizontal lightshelf of white vinyl-coated fiberglass awning material on the façade of the building was utilized. These light shelves shade the glass below from direct sunlight, and reflect this light through the clear glass in the band from 8 to 11 feet above the floor and onto the ceiling for a deeper and more uniform distribution. The lightweight material used in the awnings would disintegrate easily in the event of an explosion, helping to diffuse the problem of flying debris.

The peak overpressure and positive phase duration determine the specific impulse of the blast wave, and both factors influence the property damage and injury that the blast wave can cause. These two parameters must be addressed, as some materials can resist rapid high level blast, but will fail as the duration is extended.

Some of the necessary information for designing glazing for bomb-blast mitigation are the peak overpressure (psi), duration of the load (msec) or the impulse (psi*msec) if the blast properties are known. If only the threat is established, a load can be calculated from the size of the anticipated bomb (TNT equivalent lbs), the distance away from the target (stand off distance) and the site altitude.

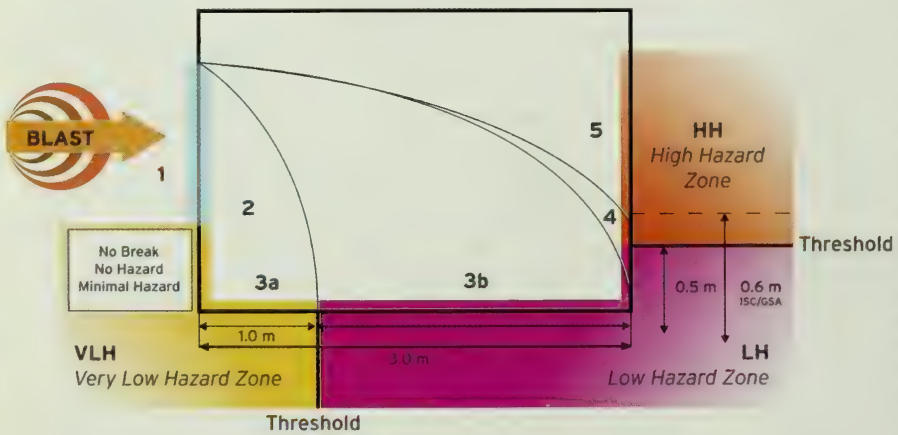
Bomb blast performance of glazing

The two primary aspects of glazing that characterize blast performance are 1) the level of blast load causing the glazing to initially crack or break, and 2) the retention of glass in the frame. Thus, both the performance of the frame and the glazing process are equally critical.

If glass leaves the frame, it has the potential to become a secondary hazard of the explosion. The hazard is dependent upon the size, shape and velocity of the fragments or shards, as well as the direction in which the glass is propelled. Classification guidelines for the performance of glazing during a blast event are used and defined in the diagram below and in Table 1 .

Combined ASTM F 1642/ISC Hazard Criteria

Fragment Severity Rating under the ISC takes into account the final location of particles from the glazing after an explosion as seen by the arcs and numbers in the below figure. The hazard rating developed by ASTM F 1642 takes into account the fragment size, number of fragments and their final location and is depicted by the blocks of color. All dimensions are the same except for the height on the back wall which is 0.5 m (20 in) for ASTM and 0.6 m (24 in) for ISC.



Fragment Severity Rating under the ISC/GSA takes into account the final location of particles from the glazing after an explosion as seen by the arcs and numbers in the above figure. The hazard rating developed by ASTM F 1642 takes into account the fragment size, number of fragments and their final location and is depicted by the blocks of color. All dimensions are the same except for the height on the back wall which is 0.5 m (20 in) for ASTM and 0.6 m (24 in) for ISC/GSA

Table 1: Interagency Security Council (ISC) Glazing Protection Levels Based on Fragment Locations

PERFORMANCE CONDITION	PROTECTION LEVEL	HAZARD LEVEL	DESCRIPTION OF WINDOW/GLAZING RESPONSE
1	Safe	None	Glazing does not break. No visible damage to glazing or frame.
2	Very High	None	Glazing cracks but is retained by the frame. Dusting or very small fragments near sill or on floor acceptable.
3a	High	Very Low	Glazing cracks. Fragments enter space and land on floor no further than 3.3 feet from the window.
3b	High	Low	Glazing cracks. Fragments enter space and land on floor no further than 10 feet from the window.
4	Medium	Medium	Glazing cracks. Fragments enter space and land on floor and impact a vertical witness panel at a distance of no more than 10 feet from the window at a height no greater than 2 feet above the floor.
5	Low	High	Glazing cracks and window system fails catastrophically. Fragments enter space impacting a vertical witness panel at a distance of no more than 10 feet from the window at a height greater than 2 feet above the floor.

System performance

Equally important to the design of the glass, is the design of the frames and attachments to the structure. To realize the greatest protection, the laminate must be retained within the framing members to enable the PVB interlayer to behave as a blast shield and prevent debris from entering the occupied space. This can be accomplished by enhancing the framing system design, such as: increasing the glazing bite, adding structural silicone adhesive, introducing enhanced anchorage and/or hardware or a combination of all enhanced glazing techniques. It is strongly recommended to solicit the involvement of a qualified blast consultant to verify the overall performance of the glass and framing system combination to resist the specified blast criteria.

Testing

There are basically two test methodologies utilized in blast testing; shock tube and arena. Each methodology can be used to evaluate glass lites or a complete glazed system. The frame in which the glass is glazed, as well as the anchoring of the frame to the building, both play significant roles in the ultimate success of a glazing system. Without proper glazing, the glass could come out of the frame. Without sufficient anchoring, the frame could come out of the wall.

The tests are different, however, in what you can do with them. Typically, the shock tube tests are done on a single fenestration system per blast and can be less expensive than an arena test. The shock tube sends a wave of pressure through a tube towards the fenestration. The pressure and speed of this wave can be manipulated to simulate many different blast levels. An arena test is performed with an actual blast using detonated TNT (or equivalent weight TNT) explosive material. Several systems can be placed around the perimeter of the blast, and they will experience a different blast load depending upon the distance away from the detonated bomb. An arena test serves a good practice for evaluating multiple variables with the same blast load.

The two main documents used as a guidance in testing are General Service Administration (GSA) TS-01 and American Society of Testing and Materials (ASTM) F 1642. Both test methods recognize shock tube and arena testing. The protocols are very similar, with slight differences in the manner in which glass spall from the glazing is measured at the end of the test. Both documents measure the overpressure, duration and the amount of time the load is applied to the glass – as a means of quantifying the test. The characteristics of the test that are recorded are:

- ***Overpressure (psi)***
- ***Duration (msec)***
- ***Impulse (psi*msec – calculated from overpressure and duration)***
- ***Glass condition***
- ***Glazing retention in frame***
- ***Glass fragment number, size and location***
- ***Frame condition***

Neither document provides guidance on the blast size or duration. That information comes from the threat and risk assessment of the facility. Some common levels of blast that have been extracted from designs are: 4 psi at 28 psi*msec (basic level) and 10 psi at 89 psi*msec (enhanced level). There are some government agencies that require 40+ psi overpressure with several hundred msec durations; however those levels are typically used specifically for very high risk facilities. Using laminated glass with polyvinyl butyral (PVB) interlayers in properly designed frames can successfully meet all of the mentioned blast levels. For low level blast loads, standard commercial frames with properly designed glazing, anchoring and laminated glass have been shown to perform effectively. For higher level loads or complex structures, a blast consultant or structural engineer may need to be contacted for design review.

In addition to the test methodologies outlined above, software analysis programs have been established to assist in analyzing the response of windows during an explosion. These programs were all developed based on past testing that was conducted and they assist blast consultants and engineers in the design process.



Tests prove that when windows glazed with laminated glass with a PVB interlayer are subjected to a blast impulse, broken glass fragments tend to adhere to the PVB interlayer rather than spraying building occupants.

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at: archrecord.construction.com/resources/conteduc/archives/0412solutia-1.asp

To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, 877-674-1233 or email glazin@solutia.com. The following quiz questions include information from this material.

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LEARNING OBJECTIVES

- *Understand how laminated glass with a polyvinyl butyral (PVB) interlayer can be used in the design of a building to protect that building, neighboring buildings and their occupants in the event of a bomb blast.*
- *Recognize the situations in which a bomb blast risk assessment should be conducted prior to the design of a building or prior to the retrofitting on an existing building's windows.*
- *Understand the dynamics of a bomb detonation and the impact of bomb fallout on a building's structure*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 328. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website, *archrecord.construction.com*, to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. According to research, approximately what percentage of bomb blast injuries are glass-related?
 - **a.** 35%
 - **b.** 45%
 - **c.** 65%
 - **d.** 75%
2. The strongest blast wave during a bomb detonation is known as the:
 - **a.** Blast load
 - **b.** Peak positive overpressure
 - **c.** Positive phase duration
3. Which of the following may not be addressed during a bomb blast mitigation study?
 - **a.** Overpressure
 - **b.** Load duration
 - **c.** Voltage
 - **d.** Site altitude
4. When testing glazing systems, the two characteristics by which blast performance is measured are blast load and glass retention within the frame.
 - **a.** True
 - **b.** False
5. After the Oklahoma City bombing, an investigative team discovered glass from the Murrah Federal Building as far as six miles away.
 - **a.** True
 - **b.** False
6. In addition to blast mitigation, windows made with a polyvinyl butyral interlayer offer additional benefits that include all of the following except:
 - **a.** Decreased visibility
 - **b.** Noise reduction
 - **c.** Solar protection
 - **d.** Intruder resistance
7. Bomb blast consultants may also weigh the risk of major weather events when making determinations about a building's laminated glass needs.
 - **a.** True
 - **b.** False
8. Which of the following is not a factor recorded during bomb blast mitigation testing for glass?
 - **a.** Glass opacity
 - **b.** Glazing retention in frame
 - **c.** Number, size and location of glass fragments
 - **d.** Frame condition
9. Of the following methods, which is not utilized to improve blast performance of laminated glass?
 - **a.** Add structural silicone adhesive
 - **b.** Enhance anchorage
 - **c.** Decrease the glazing bite
10. A risk assessment is not necessary for retrofitting an existing building for laminated glass.
 - **a.** True
 - **b.** False

About Solutia Inc. and Viracon

Solutia Inc. is a world leader in performance films, producing Saflex® and Vanceva™ brand polyvinyl butyral interlayers (PVB) for laminated glass in automotive, architectural and residential applications.

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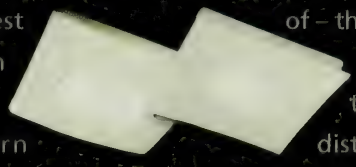
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The art & science of good ventilation

ONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **The art & science of good ventilation.** To earn one AIA/CES earning Unit, including one hour of health safety elfare credit, answer the questions on page 271, ıen follow the reporting instructions on page 328 r go to the Continuing Education section on *chrecord.construction.com* and follow the porting instructions.

EARNING OBJECTIVES

fter reading this article, you should be able to:

- *Understand why ventilation in the home is more important today.*
- *Identify the components of systems that ensure good indoor air quality.*
- *Design to achieve good indoor air quality.*

Today's homes are built tightly, which makes them more energy efficient. The emphasis on energy efficiency, however, has led to another unexpected result: new homes are experiencing air quality problems unknown to older buildings.

Adequate indoor air quality once could be taken for granted because houses leaked enough that a sufficient air supply was produced by "accidental" ventilation. Today, tighter houses unpredictably supply adequate air only part of the time—whenever wind and temperature pressures are strong enough to force enough air through incidental openings.

The problem began to show up in the late 1970s, when tighter construction became necessary because of rising energy costs. It was soon apparent that tighter homes did not always have a healthy and comfortable air supply.

Within a short period of time, various methods of mechanically providing continuous fresh air for breathing appeared on the market. Generally, the products were outgrowths of commercial and institutional technologies that were modified for the residential field; in fact, most of today's products and strategies are refinements of those beginnings.

One such method, mechanical exhaust—range hoods and bath fans, operated **intermittently** in kitchens and bathrooms respectively—has been a standard feature in North American housing for many years. Today, the addition of **continuous** mechanical ventilation has become necessary in response to more tightly built houses.

So why is the concern for poor indoor air growing?

Poor quality indoor air aggravates respiratory ailments. The incidence of asthma has increased dramatically over the last 25 years in the U.S.

An estimated 23.2 million Americans suffer from the ailment, including almost 9 million under the age of 18. According to the American Lung Association (ALA), asthma is the seventh-ranked chronic health condition in the United States and the leading chronic illness of children, making their airways (bronchial tubes) particularly sensitive to irritants.

Asthma causes almost 500,000 hospitalizations and about 5,000 deaths annually. Health care costs associated with asthma are estimated at $14.5 billion a year. The number of deaths due to asthma, the number of Americans diagnosed with asthma, and the health care costs of asthma continue to increase each year. Hospitalizations due to asthma have increased 25 percent since 1979, and asthma deaths increased 109 percent between 1979 and 1998. Poor air quality is suspected to be a main culprit in the rise of respiratory ailments over the past two decades.

Contamination and excess moisture are chief causes of so-called "sick building syndrome" and are responsible for a long list of allergies and pathologies. Concentration of toxic or harmful substances—like dust, pollens, spores and bacteria as well as pathogenic germs and bacilli increase dangerously when there is a lack of fresh air.

U.S. Environmental Protection Agency (EPA) studies of human exposure to air pollutants indicate that indoor levels of pollutants may be 2-5 times, and occasionally more than 100 times, higher than outdoor levels. These levels of indoor air pollutants are of particular concern because most people spend about 90 percent of their time indoors.

Modern buildings clearly have a problem in providing a healthy or even appropriate indoor environment. The EPA concedes that about 30 percent of new or renovated buildings have serious indoor air quality (IAQ) problems, and ranks IAQ as the nation's most prominent environmental problem.

Controlled ventilation, properly considered building design, and the use of healthy building materials can provide good indoor air quality and help to solve this problem.

THE MEASUREMENTS

Ventilation brings with it a few units of measure that may need explanation. The explanations and definitions in this section are used throughout this paper.

Cubic feet per minute (CFM) is the common measure of airflow. It reflects the number of cubic feet of air flowing in one minute. The Standard International (SI) system uses liters per second (l/s). One CFM is about one-half l/s.

Static pressure, usually measured in inches of water, is a measure of duct resistance. When used as part of a fan rating, it is the duct resistance anticipated when rating the airflow of the fan; if the actual duct system in an installation provides more resistance, the fan will produce less (CFM of) airflow. The SI system uses Pascals (Pa); 0.1 inches of water is about 25 Pascals.

Air changes per hour (ACH) is the number of times in one hour that a volume of air equal to the volume of a room, or a building, is exchanged. Note that one air change does not remove all the air in the room; because of mixing during the exchange, about one-half of the air is new after one air change.

Sones are a common unit of measurement that translates decibel readings into numbers that correspond to the way people sense loudness. The average quiet refrigerator operates at one Sone. Two Sones sounds twice as loud as one Sone.

How much air do we need?

Air for breathing is such a basic human need that it is surprising it was not the first requirement written into all building codes. The human body can go for days, even weeks without food, a few days without water, but only minutes without air. And the air must be of a certain quality.

Research done in the '70s and '80s measured the condition of indoor air, the relationship between the condition of the air and various indoor and outdoor influences, and the amount of outdoor air required for human comfort and health.

Today's standards reflect the consensus of various experts in industry and science. Although variously stated, there is agreement that we need about 15 cubic feet per minute (CFM) of fresh air, per person. Living spaces of average size will furnish that quantity of air when ventilated at roughly 0.35 air changes per hour (ACH). In general, older homes may have one to two ACH just through natural leakage. Tightly sealed new homes cannot provide the required air through accidental ventilation.

Mechanical ventilation is the only predictable method of furnishing air for breathing and comfort.

How do we control the air contamination?

There are literally thousands of air pollutants and potential air pollutants. Human occupants produce some of these contaminants, including CO_2, moisture, particulates, and odors. Building materials and other indoor items such as furniture also produce a variety of chemical and particulate pollutants.

In general, the contaminants that concern us are either particles or gases. The list of particulate contaminants includes:

- *Mold Spores*
- *Pollen*
- *Pet Dander*
- *Dust*
- *Smoke*
- *Grease Particles*



Good quality filters may control particulate contaminants. The most effective filtration tools, however, simultaneously circulate and filter indoor air while bringing in air from outdoors.

Among the gaseous contaminants are:

- *Excess Moisture (humidity)*
- *VOCs (Volatile Organic Compounds – thousands of them)*
- *Formaldehyde*
- *Carbon Monoxide*
- *Carbon Dioxide*
- *Odors*

Gaseous contaminants may be controlled through continually operated exhaust fans or heat recovery ventilators (HRV) and energy recovery ventilators (ERV), both of which bring in fresh air from the outside, dilute contaminants and exhaust them.



Any number of high quality and widely available exhaust fans can be used for continuous use. Two very important aspects of fans designed for continuous operation are that they are quieter and more energy efficient than fans designed for intermittent use. The sound level of a product which will run continuously is much more important than it is for an intermittent exhaust fan.

By recovering the energy to heat in the winter and cool in the summer, an HRV can provide clean fresh air continuously while helping to keep energy costs low. An ERV will also recover moisture from the exhaust stream.

An ERV is the best solution if the annual cost of operation is a consideration, although it may take several years to pay back its higher initial installation cost. Because the ERV has an energy transfer (enthalpic) core, excessively low humidity is less likely to be a problem, thereby reducing the need for a separate humidifier and its considerable energy cost. HRVs and ERVs also provide balanced ventilation that avoids problems associated with the home's pressurization or depressurization.

The use of a dedicated exhaust fan, HRV or ERV to provide low-level general, effective ventilation at an energy efficient rate must be supported with intermittent bath and kitchen ventilation for source control.

Continuous ventilation equipment must run whenever the house is occupied, especially during spring and fall. Windows may be opened, but unless there is a breeze to ensure ventilation, it is easiest and best to just let the unit run, even if windows are open. Incidental (or accidental) ventilation is driven by natural forces and they are least effective when the temperature difference between indoors and outdoors is the smallest. That is when mechanical ventilation is needed the most.

Moisture can be critical

"We have come a long way in the past 10-15 years in our understanding and reduction of gaseous contaminants, and the impact of furniture, wood products and building materials that, historically, out-gassed VOCs," says David W. Wolbrink, vice president of research and development for the nation's leading residential ventilation manufacturer.

"Excess moisture still exists in the home. In fact, the problem has grown more severe," Wolbrink says.

It is essential to understand moisture in designing and operating a home in a way that preserves good indoor air quality.

Swings in the moisture level—in either direction—can lead to serious problems.

Ideally, indoor relative humidity should be held within a range of 30 to 50 percent. In **hot humid climates** that may be difficult, but relative humidity must absolutely **never** be permitted to be **above 65%**. In **cold dry climates**, relative humidity should be **no lower than 20%**.

Less than 30 percent relative humidity can cause wood to shrink, result in increased dust, cause respiratory, throat and skin irritations and create static electricity.

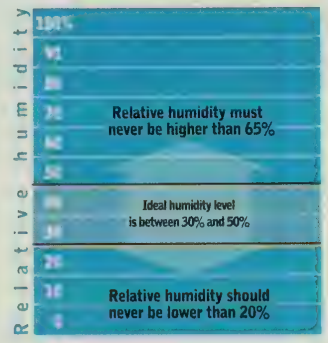
As the outside temperature drops, so does the recommended relative humidity inside the home, because during cold weather higher humidity will lead to excessive moisture and condensation, which can lead to mold and mildew.

Mold can grow on surfaces in any climate at humidity levels above 70 percent.

Water intrusion problems leading to mold buildup often are a result of faulty building envelope design and construction that permits water to enter the wall from inside or outside and trap it so the inside of the wall can't dry out. Crawl spaces also are common sources of moisture buildup.

More new homes than ever today are gabled, and intersecting rooflines can be another problem area if errors are made in roofing or flashing installation.

"Moisture—and resultant mold problems—are the subject of more current research than any other area of construction," says a spokesperson for a U.S. ventilation manufacturer. "Ventilation won't overcome the problems of bad design, but ventilation, coupled with good design, will create a very good indoor environment."



The house is a "system"

Modern homes have several interactive systems. Mechanical components of the system are envelope design, infiltration/exfiltration, HAC system, sources/remediation and general occupant contamination. The envelope design, infiltration/exfiltration and HAC system must be appropriate for the climate to support effective ventilation. Assuming that they are, the house will have these things in common: people and their activities are the major source of indoor humidity; showers are the greatest contributor; breathing and perspiration, second; and cooking, third.



Showers and cooking always produce high concentrations of moisture for a short time in predictable spots, and are best controlled by intermittent "spot" ventilation.

Breathing and perspiration, in contrast, take place throughout the house and are best controlled by general continuous ventilation.

Keeping these two quite different strategies in mind makes control of excess moisture more logical.

If high moisture concentrations produced by the shower or cooking are not controlled at the source, they are dumped into the whole house. That causes excess moisture and makes it difficult if not impossible to provide good indoor air quality.

Continuous ventilation is for general health and breathing, and the installation must be done with that in mind. A quiet unit properly located and installed will be running continuously, 24/7.



Design of central ventilation requires decisions related to distribution. Each room requires fresh air, and mixing can be good if doors are open between rooms. The central heating and cooling systems ensure the air is well mixed between the rooms and a single inlet for fresh air is usually acceptable. The furnace return is a good way to introduce the fresh air. A single outlet for stale exhaust, centrally located, is being used more and more as the technology matures.

The key is to ensure that homeowners will use what has been installed. The quieter the fans are, for instance, the more often they will be used. It is important to remember that the simpler the design, the more likely it is to be effective. For spot ventilation, some type of automatic control would be beneficial.

Today's exhaust fans are quieter and more energy efficient. Some manufacturers now offer a variety of Energy Star-qualified ventilation fans designed for use not only in bathrooms and kitchens, but also in dens, utility rooms, offices, conference rooms and recreation rooms. Recently developed models use 65 percent less energy than standard models and may qualify for local utility rebates. Energy Star-qualified models now incorporate high-efficiency centrifugal blowers that provide virtually silent performance.

Newer models have a myriad of light options, may be recessed to match overhead lighting and some incorporate heaters. The style and operation of these new models encourage their installation in laundry rooms, basements, craft rooms, workshops, hallways and closets.

"Even the best designed home indoor air quality system is of no value if it is not used," says a manufacturer's spokesperson. "Humidity sensing fans are the best solution we have to that problem."



What about the bathroom?

Contemporary bathrooms are, generally speaking, larger, and many new master baths now include showers with multiple heads, whirlpool baths and steam rooms, all of which contribute additionally to the humidity load and create a need for increased ventilation.

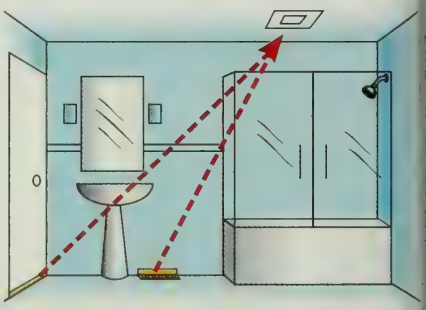
The most important thing to remember with regard to bathrooms is that showers are the greatest contributor to excessive humidity and that homeowners can save the house from excess moisture by running the fan for 20 minutes after each shower.

Self-sensing humidity fans operate automatically when humidity rises rapidly and turn themselves off 20-30 minutes after humidity returns to where it was before.

There are two important things to understand about humidity sensing fans. First, the best models sense the change in humidity, not the humidity level itself so climates that are naturally more humid will not trigger the fans to operate unless over-ridden by the occupant. And second, sensitivity levels and after-run times can be personally set by the home's occupants.

Installing a wall timer switch allows the fan to remain on long enough to remove the excess moisture without having to return to switch it off.

Location of the bathroom fan is also a critical factor in ensuring proper performance. The first choice should be over the shower. If this is possible, select a fan UL-listed for tub or shower installation.



Where that is not practical, one should visualize a line from the bottom of the bathroom door and the heating/cooling register (which are the exhaust fan's air supplies) to the ventilator. Make certain that that line passes through the steam cloud generated by the shower. Air flowing through the room along that line will capture the excess moisture from the shower.

Since intermittent contaminants are produced in high concentrations, a high ventilation rate is required to keep them from dispersing throughout the house. This explains the relatively high airflow rate of typical intermittent kitchen and bathroom ventilation.

The Wauconda, Ill.-based Home Ventilating Institute (HVI) recommends eight air changes per hour for bathrooms. This recommendation is based on both years of experience and on calculated needs. Performance has been tested through research at Texas A&M, and the results show actual contaminant concentration follows theoretical dilution calculations with excellent reliability. Exceptions to the recommendation may be considered in unusual situations such as when a bathroom is unusually large. In the case of an extremely large bathroom, multiple fans may be required to effectively handle moisture and odor at their respective source.

How much bathroom ventilation do you need?

8 ft. Ceiling
L x W x 1.1 = CFM

Over 8 ft. Ceiling
Ceiling Ht x .1375 x L x W = CFM

Bath fans must be sized to meet HVI's recommended 8 ACH. Calculate bathroom fan size in CFM in the following way:

- *For an 8' ceiling, take the square footage of the room and multiply it by 1.1.*
- *For any ceiling over 8 ', take the height of the ceiling and multiply it by .1375. Take this figure and multiply by the square footage of the room. This will equal the recommended CFM's. (Example- 10' x 12' room with 10' ceilings. 10' x .1375 =1.37 x 120 square feet = 164 CFMs.)*
- *Both calculations will give you the **minimum** recommended CFM.*

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at:

archrecord.construction.com/resources/conteduc/archives/0412broan-1.asp

To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, call Broan-NuTone Customer Service at (800)558-1711. The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Understand why ventilation in the home is more important today.*
- *Identify the components of systems that ensure good indoor air quality.*
- *Design to achieve good indoor air quality.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 328. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. New homes are experiencing indoor air quality problems unknown to older buildings.
 - **a.** true
 - **b.** false
2. What is the ideal range for indoor humidity?
 - **a.** 20-40 percent
 - **b.** 35-60 percent
 - **c.** 30-50 percent
 - **d.** 45-70 percent
3. We need about ____cubic feet per minute (CFM) of fresh air per person.
 - **a.** 5
 - **b.** 10
 - **c.** 15
 - **d.** 20
4. Tightly sealed new homes cannot provide the required air through accidental ventilation.
 - **a.** true
 - **b.** false
5. The Home Ventilating Institute recommends _____air changes per hour for bathrooms.
 - **a.** two
 - **b.** four
 - **c.** six
 - **d.** eight
6. Two very important aspects of fans designed for continuous operation are
 - **a.** size
 - **b.** sound level
 - **c.** energy efficiency
 - **d.** style
7. Excess moisture makes it difficult, if not impossible, to provide good indoor air quality.
 - **a.** true
 - **b.** false
8. Bathroom fan size in CFM may be calculated by taking the square footage of the room with an 8 ft. ceiling and multiplying it by _____.
 - **a.** the duct size, in inches.
 - **b.** 2.1
 - **c.** .75
 - **d.** 1.1
9. Cooking grease and smoke are easily distributed throughout the home if not immediately and completely removed at their source.
 - **a.** true
 - **b.** false
10. Homes must be designed properly and incorporate appropriate ventilation technology to provide the potential for good indoor air quality.
 - **a.** true
 - **b.** false

About Broan-NuTone LLC

Over 70 years ago, two young entrepreneurs set out to make residential environments more comfortable and convenient. Today, the brands Henry Broan and J. Ralph Corbett established lead the residential industry in providing trusted and respected products that make today's homes even more comfortable and convenient for today's health-conscience, on-the-go families

Broan® is a trademark of Broan-NuTone LLC, North America's leading manufacturer and distributor of residential ventilation products including range hoods, ventilation fans, heater/fan/light combination units, Indoor Air Quality (IAQ) Fresh Air Systems, built-in heaters, whole-house fans, attic ventilators, paddle fans and trash compactors.

NuTone® is a trademark of NuTone Inc, a subsidiary of Broan-NuTone and North America's leading manufacturer and distributor of residential built-in convenience products including door chimes, central vacuum systems, stereo intercom systems, home theater speakers, medicine cabinets, and ironing centers.

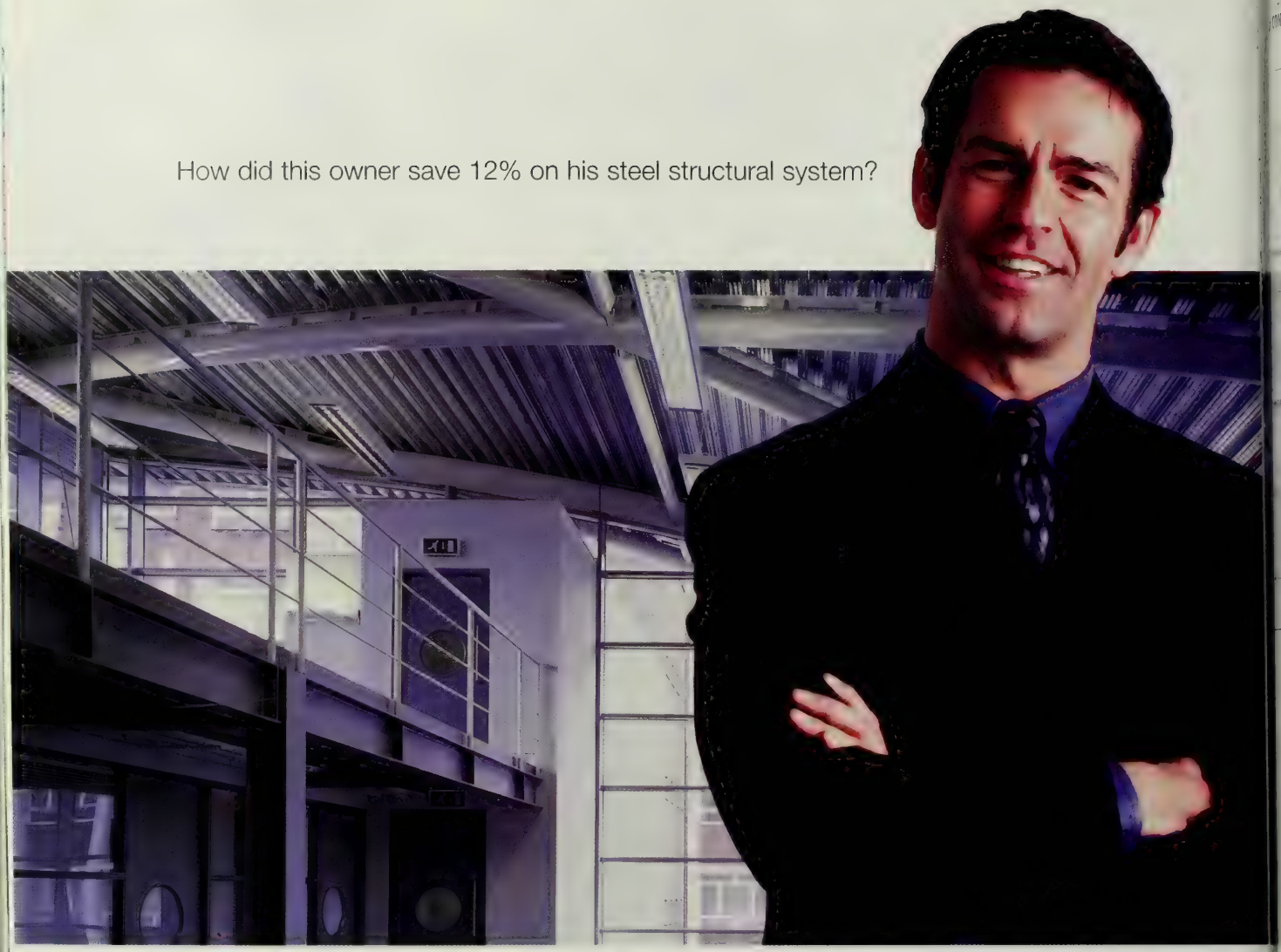
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How did this owner save 12% on his steel structural system?



Interoperability – or what used to be called Electronic Data Interchange – enabled the entire building team to communicate seamlessly so the collaborating firms could identify, access and integrate electronic information across multiple systems. This interface created efficiencies that eliminated manual re-entry of data, duplication of business functions and the reliance on paper-based information management systems. The biggest advantage of **interoperability** is that it enabled real-time discussions on detail development and problem resolution to take place.

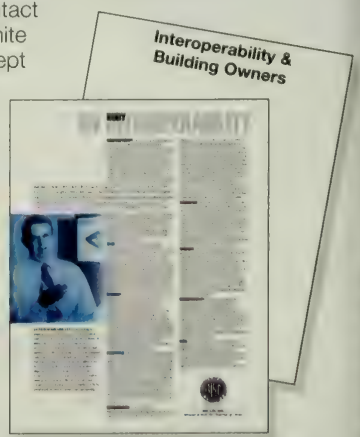
Interoperability streamlined the design to manufacturing process to:

- Improve communication between engineer, detailer and fabricator to meet owner requirements
- Increase time for innovative thinking, (design through erection) taking cost out of the project
- Save time by expediting the structural design through manufacturing
- Assure accuracy, reduce RFIs and eliminate fabrication errors
- Accelerate material procurement for on-time delivery
- Allow building occupancy sooner

Only structural steel gives you the full advantage of **interoperability** through CIS/2 technology.

The reality of **interoperability** is that it enables building owners to save blocks of time and money during the design through manufacturing phase.

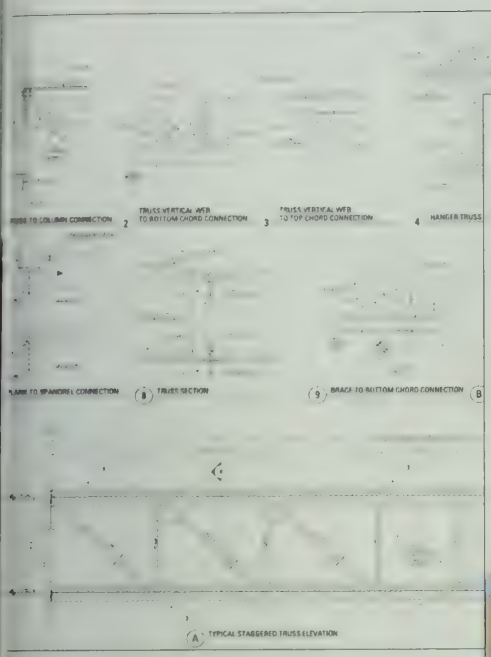
For your next project, make sure your building team utilizes **interoperability**. Contact AISC for a building owner White Paper that explains the concept of **interoperability** in more detail, and then give that paper to your building team. Just as structural steel is the material of choice, so too is CIS/2 **interoperability** the technology of choice.

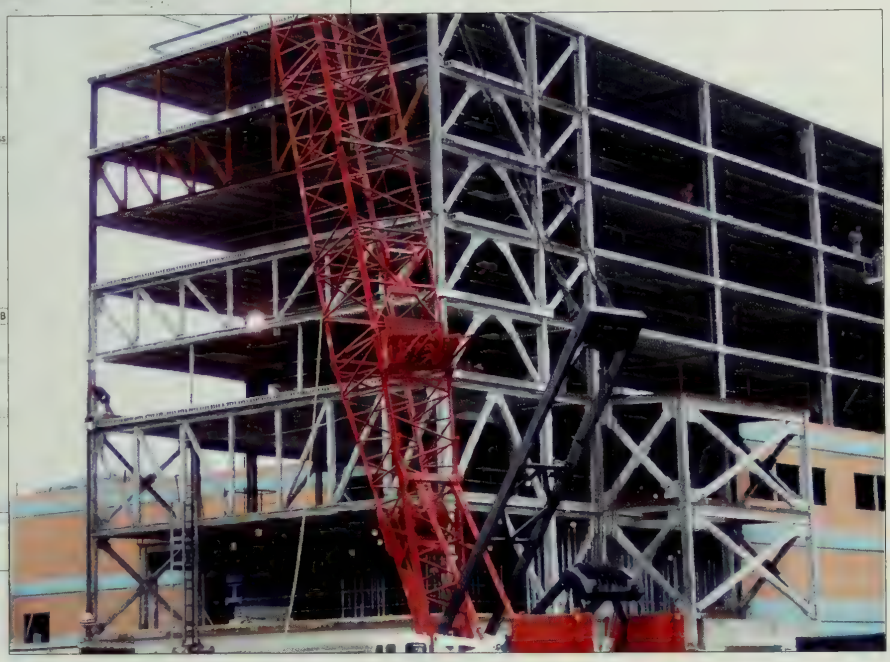


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THE COUNCIL OF AMERICAN STRUCTURAL ENGINEERS, IN CONJUNCTION WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC., PRESENTS

Improving project performance and productivity:

The coordination and completeness of structural construction documents

NTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Improving project performance and productivity: The coordination and completeness of uctural construction documents.** To earn one A/CES Learning Unit, including one hour of alth safety welfare credit, answer the questions on ge 277, then follow the reporting instructions on ge 329 or go to the Continuing Education section *archrecord.construction.com* and follow the ɔorting instructions.

ARNING OBJECTIVES

ter reading this article, you should be able to:

Recognize the value of the coordination of construction documents.

Identify the process required to generate coordinated and complete construction documents

Understand the role of the architect in the provision of coordinated and complete construction documents

Be motivated to encourage the use of the CASE 962D Guideline in projects

What one thing could you do on your next project that would have the greatest impact on project quality and cost?

Improve the quality of construction drawings! But how?

Proper coordination of information between design and construction professionals resulting in coordinated drawings that are complete for construction has the greatest impact on project quality and cost. Article after article and study after study verify that today's typical construction project finds itself in a morass of requests for information, change orders and extras. Contractors are often unable to accurately bid projects as a result of poor quality construction documents. Project schedules slip, budgets are exceeded and the members of the design and construction teams become increasingly frustrated with each other. Contractors bemoan the decreasing quality of construction documents. Design professionals feel the pressure of balancing increasing demands with lower fees. Everyone knows the value of coordinated construction documents, yet the problem remains. How can this critical problem be solved?

The solution is not to make complete documents the responsibility of a single party. The solution is for each design professional to communicate their information requirements to design team members, to understand the needs of the design team, to seek the advice of construction professionals and to strive to provide a complete coordinated set of documents.

The solution is not to increase the cost of project construction through delays and extras. The solution is to educate clients to understand that their investment in the proper design fees will add value to the project and be recouped during the construction process.

The solution is not to point fingers. The solution is to improve the process. The solution is the development of a ***Quality Management Plan***, specific to each firm and modified to suit each project.

Development of a quality management plan

But at the same time, increased fees are not a guarantee that proper coordination and completeness of construction documents will occur resulting in the desired level of quality. The key to achieving the desired level of quality throughout the life of the project is the implementation of a firm, specific *quality management plan* modified to suit the particular project. Such a plan will address, in part, the quality and completeness of the construction drawings.

Since the mid-1990s a continuing refrain has risen from owners, general contractors and specialty contractors regarding the poor quality of design documents. But as often occurs in any personal interaction, complaints often create a level of defensiveness on the part of designers. Comments like … "I can't provide dimensions that aren't yet fixed." "I don't have fees to provide everything you want." "You want something different on every project!" "Just learn to read the plans—the answers are all already there." … become a normal part of project dialogue.

In developing the *quality management plan*, the designer (architect, structural engineer, HVAC designer…) should be cognizant of the content and dimensional requirements of other design professionals who use the documents to generate their portion of the construction plans and of the contractor who will bid and execute the project from the construction documents.

Each participating member of the design team must develop such a plan for their organization and their specific portion of the project deliverables. At a minimum, the quality goal for construction documents should not only be compliance with the applicable code to assure public safety, meeting the owner's goal of a functional project or completing the project on time and within budget; the quality goal should also be construction documents that are accurate, complete and with sufficient detail, quantity and location to allow a qualified contractor to properly plan, perform material takeoff, develop fabrication and erection pricing. This will enable the contractor to prepare reliable initial pricing and an accurate proposal. Then, after the award, the contractor will be able to build the structure in a manner consistent with their understanding at the time of bidding.

Managing these routines or quality systems is an investment in time and effort that will have a positive financial return. Using concepts developed by professionals in quality management systems is an effective way to gain a new perspective in establishing or reviewing these systems.

Structural engineers address the problem

In order to help break this harmful cycle, the Council of American Structural Engineers (CASE) chose to attack the problem through a fresh approach. Instead of focusing on their required sources of information for structural design and pointing to examples of where they have received inadequate information, CASE addressed the issue by recognizing the contribution of structural engineers to the solution of the problem and focusing on how structural engineers can contribute to the solution. With a strong focus on how structural engineers can improve their documents, CASE charged their National Guidelines Committee with the responsibility to develop the *Guideline Addressing Coordination and Completeness of Structural Construction Documents (CASE 962D)*. The CASE 962D Guideline, published in 2003, provides a guideline for each firm to develop its own specific *quality management plans* and to implement that plan on each project. Such a plan will aid in the production of construction documents that are complete and well coordinated. However, the structural engineer of record cannot take these steps alone—the entire design team must get on board in order to reverse the trend and raise the quality of construction documents. Quality documents can then be used:

- *for accurate bid or cost estimate preparation*
- *to allow effective project planning and construction schedule development*
- *to efficiently produce shop drawings*
- *to allow the structure to be built as intended*

In addition, complete construction documents will:

- *include clear descriptions of structural elements and their material specifications*
- *be coordinated across disciplines*
- *show all dimensions necessary for construction and the relationship of structural and non-structural elements*
- *document the governing codes and loads used*
- *identify and provide requirements for portions to be designed by specialty engineers*
- *specify the quality assurance requirements.*

These considerations are independent of the type of framing system selected for the project.

In developing the 962D Guideline, CASE drew on the expertise of its members from across the country with experience in utilizing various framing materials. In addition, they sought input from trade associations representing various industries. This input was used to identify key elements that should be included in a coordinated and complete set of structural construction documents.

Not a standard of care

The CASE 962D Guideline is a guideline and not a standard of care. It was developed as the result of the general consensus of a group of authors and is not intended to be a complete and conscientious evaluation of all of the relevant project-specific factors and circumstances regarding the structural engineer's engagement and performance. The guideline is just that—a guideline that can be utilized to form the basis of a *quality management plan*.

The guideline itself is structured as a narrative, discussing:

- *responsibilities within the design team*
- *project communication*
- *coordination of documents*
- *completeness of structural documents*
- *dimensions*
- *project delivery systems*
- *construction document revision*
- *quality management*

In addition, a detailed review checklist organized by drawing category, discipline and structural system is included as a starting point for firms to create their own *quality management plan*. In developing the checklist, CASE intended for structural engineering firms to utilize the checklist as a living document that would be adapted for each firm's individual needs and typical project types.

The role of the architect

If the CASE 962D specifically provides a guideline for the structural engineer, what role does the architect play in the improvement of construction drawings? The contribution of the architect to the construction documents, while different in content and scope, parallels that of the structural engineer in purpose. The end goal of any set of construction documents is to provide documents suitable for accurate bidding and problem-free construction. The architect can best accomplish this by developing a *quality management plan* that establishes lines of communication and responsibility, defines the importance of information exchange between the architect and the design team and constructors and is project specific. The architect may then monitor the process during document preparation to ensure complete construction documents.

The CASE committee's vision was that with time organizations representing other design professionals would adopt a similar methodology and/or guidelines. However, in the meantime the principles and concepts within the CASE 962D document can be applied to each discipline in their development of a *quality management plan*.



Specifically, the project architect can aid the process of developing well coordinated and complete construction documents in the following ways.

First, the architect should establish a firm specific *quality management plan*, modified to suit the specific project and encourage the design team to do likewise.

Second, the project architect should select design team members, including the Structural Engineer of Record (SER), who will perform their services within the scope of a *quality management plan*. In the case of the SER, the project specific *quality management plan* should reflect the CASE 962D guidelines. Also, the project architect should recognize that additional fees may be justifiable for the SER and other consultants due to the higher level of effort in coordinating and preparing complete structural construction plans.

Third, in the initial meetings with the project owner or developer, a clear presentation must be made emphasizing the benefits that will accrue to the project when special effort is made to develop well coordinated and complete construction documents. These benefits include more accurate bids, fewer project delays and a reduced number of requests for extras. Care must be taken by the project architect to distinguish between the assumption by the owner/developer that well coordinated and complete documents are typical on every project, while the current reality is that on most projects an adequate budget is not available to promote good team communication and an effective quality assurance plan for document preparation.

Fourth, the project architect should share specific case studies of well coordinated projects with the owner. In addition, the owner should be encouraged to advocate the selection of a structural engineer who has experience in developing project specific implementations of the CASE 962D guideline. The CASE 962D document can serve as a model for the process that can be utilized by each project design professional.

Fifth, the project architect should present the owner with a *quality management plan* for the architectural documents that clearly spells out the information the architect will be providing to other designers for the purpose of the creation of coordinated and complete construction documents. At the same time, a clear schedule of information required from the owner for the completion of the architectural process should be provided to the owner. This schedule should be detailed and the owner/developer should understand the implications of missing information or late revisions not just on the development of construction drawings, but also on the ability of contractors to accurately bid the project, maintain the schedule and avoid additional charges.

Sixth, the project architect as the prime professional must implement an effective communication plan defining the coordination of the key design professionals. Good communication must begin to take place even before the architect receives an award of services. The development of a comprehensive scope of services by the architect, in conjunction with the client, is essential for establishing an appropriate contract and for managing the budget throughout the design process. It is equally important for sound project management, since it establishes the responsibilities of the architect including their relationship to other members of the design team. A comprehensive understanding of the project scope requires free communication among all parties. The communication should be open, clear and straightforward to have a well founded agreement.

What design and construction industry experts are saying about CASE 962D

Engineering drawings are increasingly being issued as incomplete and are indicating details that cannot be constructed as drawn.... Design services are paid for based on the number of hours expended in preparation of design documents rather than on the quality of the design provided. A dollar spent on better designs can often result in a $100 savings in hard construction costs, but owners often fail to realize this.

David A. Beck, P.E.
Bennington, New Hampshire

When I call on an architect or structural engineer I discuss CASE 962D with them because I know that if they take the time to study and apply it, my next project with them will flow better.

Ted Hazledine
Benchmark Fabricated Steel
Terre Haute, Indiana

Nearly two-thirds of owners indicated a decline in the quality of design documents and pointed to incomplete construction documents as the number one reason for projects going over budget.

FMI/CMAA Fifth Annual Survey of Owners (2004)

The publication of CASE 962D represents an authoritative integration of articles and discussions by structural engineers during the past 15 to 20 years. Until now, the participants and audience have been mostly the structural engineering community. The time has come to involve the stakeholders who have the most to gain from the benefits of adopting concepts presented in the CASE guideline.

Emile J. Troup, P.E.
Canton, Massachusetts

Seventh, before and during the preparation of the design documents numerous team meetings and direct communication between design team members should take place. When direct communication takes place between design team members it should be documented and shared with other team members.

Eighth, communication does not guarantee the coordination of the final construction documents. The project architect should take the lead in assuring that various elements of the design drawings coalesce and perform as a system in the completed project. Members of the design team are responsible for coordinating their own documents under the general direction of the project architect. Such coordination requires the correlation of design calculations, specifications and existing site conditions with each discipline's design drawings. In addition, specifications should be project specific and coordinated with the calculations and construction drawings.

Ninth, throughout the design project the project architect acting as the prime professional must monitor the production of design documents by the design team against the project specific *quality management plans.* Managing these plans is an investment in time and effort that will have a positive return.

Reaching the goal

Is the goal of the design and documentation process to produce a perfect set of construction documents? No! The goal is a project that reflects the owner's needs and the architect's vision, and is on time and within budget. However, the production of design documents that are complete and well coordinated between design disciplines, sufficient for accurate bidding and adequate for construction are essential to achieving that goal.

CASE 962D: A Guideline Addressing Coordination and Completeness of Structural Construction Documents is not a solution to the problems inherent in incomplete and uncoordinated construction documents. It is a starting point for structural engineers to address their contributions to a problem that extends beyond just structural engineering. The goal is for each design professional to accept ownership for their contributions to the problem, develop individual or industry guidelines similar to CASE 962D and implement them through a *quality management plan* on each project.

So, what one thing could you do on your next project that would have the greatest impact on project quality and cost? The answer is simple — strive to put in place the *quality management plan* that will result in coordinated, complete construction drawings.

Typical CASE 962D drawing review checklist

CASE
DRAWING REVIEW CHECKLIST

Project: Project Manager: Reviewer:
Project No.: Engineer: Date:

I.	GENERAL DRAWING FORMAT				
	ITEM	√ Yes	√ No	√ N/A	COMMENT
A.	Is there a Project cover sheet including:				
	1. Name of Project?				
	2. Address of Project?				
	3. Design team and Contact person?				
	4. Scope of Work?				
	5. Location and Project Site Plan?				
	6. Deferred Item List?				
	7. List of Governing Codes?				
	8. Drawing List?				
B.	Do the sheet titles in the Drawing Index match the individual drawing titles?				
C.	Are the dates, commission numbers, revision descriptions, and initials consistent from sheet to sheet?				
D.	Do title blocks appear consistent between structural and architectural drawings (project name, fonts, text size, drawing numbering convention, etc.)?				
E.	Are drawing scales shown correctly?				
F.	Do plans show north arrow for orientation?				
G.	Are match lines shown consistently from sheet to sheet?				
H.	Are match lines consistent with locations shown on architectural drawings?				
I.	Are structural plans orientated to match architectural drawings?				
J.	Are key plans correctly shaded or hatched?				

Words of wisdom from CASE 962D

Contractors estimate construction costs and develop construction procedures based on the information presented in the Documents. If Documents that reflect a high level of coordination and completeness are provided for a project, the construction process proceeds smoothly from the initial design phase through construction and owner's acceptance. If incomplete, uncoordinated Documents are provided, the process will likely contain difficulties and conflicts, including inaccurate project billing, increased costs and missed budgets; construction misunderstandings; an excessive number of requests for information (RFIs) and change orders; conflicts among the design and construction teams; a disappointed and angry owner; and potentially costly and demoralizing litigation. These pitfalls can and must be avoided.

Chapter 1 "Purpose and Goals"

There has been a widening gap between the ability of the construction design profession to adequately describe its design and the ability of the construction industry to adequately develop a bid and schedule representative of that which it ultimately requires to construct projects.

Chapter 2 "Background"

The greatest opportunity for a complete set of Documents exists when good communication is coupled with experience.

Chapter 4 "Project Communication"

Coordination of Documents with other disciplines goes well beyond checking that the SER's gridline dimensions match the architectural and that the dimensions "close". Of particular concern for the coordination with architectural drawings, the SER should check that tolerances for structural materials are accounted for.

Chapter 5 "Coordination of Documents"

Although the responsibility for basic dimensioning of the building rests with the prime professional, the SER should verify that dimensions shown on the structural drawings are complete and coordinated in themselves. All dimensions shown on the structural drawings should be checked against the architectural drawings and should also be checked for closure.

Chapter 7 "Dimensions"

OBTAINING THE CASE 962D DOCUMENT

Copies of the CASE 962D document, *A Guideline Addressing Coordination and Completeness of Structural Construction Drawings*, are available for $30 each from CASE through the bookstore at *www.acec.org* or by calling 202-347-7474. The CASE 962D document is item #10417.

CLICK FOR ADDITIONAL REQUIRED READING

As part of this CES Learning Activity, you are required to read additional material consisting of sections 4 through 7 and 10 of the CASE 962D document. To access this material online, visit *www.aisc.org/case962d* or to obtain a faxed copy of the selected chapters call the AISC Steel Solutions Center at 1-866-ASK-AISC.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Recognize the value of the coordination of construction documents.*
- *Identify the process required to generate coordinated and complete construction documents*
- *Understand the role of the architect in the provision of coordinated and complete construction documents*
- *Be motivated to encourage the use of the CASE 962D Guideline in projects*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 329. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. When construction drawings are not coordinated or incomplete a contractor will have difficulty
 - **a.** accurately bidding the project
 - **b.** executing the architect's design intention
 - **c.** maintaining project budget and schedule
 - **d.** all of the above
2. The problem with the quality of drawings today rests with the
 - **a.** the owner
 - **b.** all members of the project design team
 - **c.** the architect
 - **d.** the structural engineer
3. A comprehensive scope of services
 - **a.** is essential for managing the budget
 - **b.** establishes the responsibilities of all design team members including their relationship to other design team members
 - **c.** is an essential step in achieving a successful project
 - **d.** all of the above
4. CASE 962D is
 - **a.** a standard of care for structural engineers preparing construction documents
 - **b.** a guideline that structural engineers can use in preparing project specific *quality management plans*
 - **c.** language for inclusion in contract documents to limit a structural engineer's liability for incomplete plans
 - **d.** specifies information to be provided to the structural engineer by the architect
5. In general, except for several western states, complete structural documents will not include
 - **a.** clear descriptions of structural elements and their material specifications
 - **b.** the relationship of structural components to pertinent non-structural elements
 - **c.** documentation of the governing codes and loads used in the design
 - **d.** connection details
6. The best first step to overcome poor quality documents is
 - **a.** for each design professional to place the blame on other design professionals
 - **b.** for the architect to encourage communication within the project design team
 - **c.** to request an increase in design fees
 - **d.** to ignore the problem
7. As the prime design professional on a project, the project architect should
 - **a.** take the lead in the discussion with project owners about the need for complete, coordinated documents
 - **b.** develop a document quality plan for the structural engineer
 - **c.** promise the owner complete, coordinated documents
 - **d.** require all communication between design team members take place with the architect present
8. Drawing review checklists in CASE 962D include
 - **a.** all of the items required to be provided to the structural engineer
 - **b.** all of the items required to be included in drawings by the structural engineer
 - **c.** typical items that should be included on structural construction drawings
 - **d.** only items relating to steel framed construction
9. When a proper *quality management plan* is in place
 - **a.** there is no need for meetings between members of the design team
 - **b.** contractors are never consulted during the design phase
 - **c.** the project architect still needs to coordinate communication between members of the design team
 - **d.** complete, coordinated construction drawings are guaranteed
10. The project specifications should
 - **a.** identify the material types and strengths to be used
 - **b.** include supporting cut sheets
 - **c.** duplicate the information noted in the General Notes
 - **d.** not be project specific

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Email: solutions@aisc.org

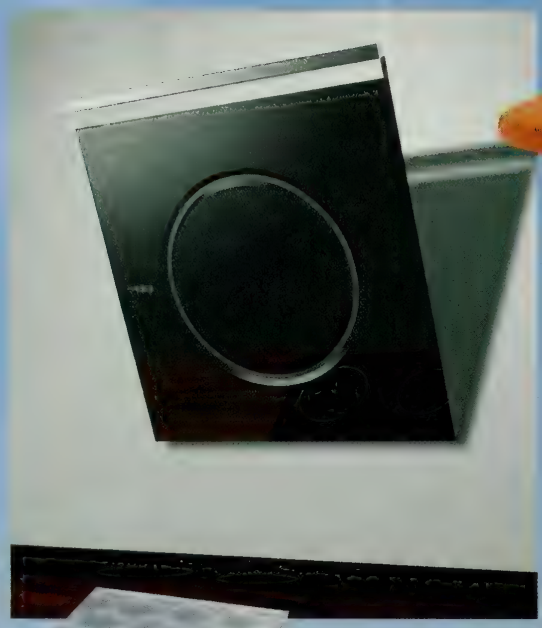
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CASE

CIRCLE 92 ON READER SERVICE CARD OR GO TO HTTP://ARCHRECORD.CONSTRUCTION.COM/READERSERVICE/READERSERVICE.ASPX

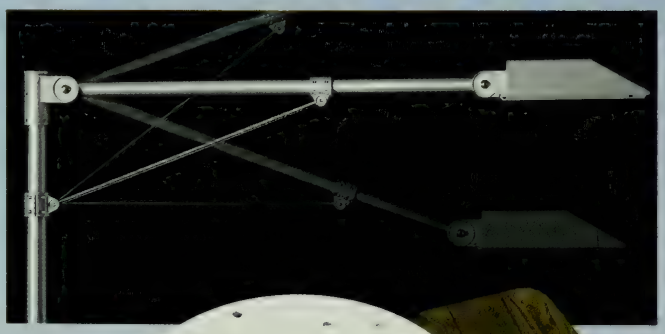
Improving project performance and productivity.







Product Report





How do you recognize a well-designed product? The seminal designer Charles Eames once said, "The real questions are: Does it solve a problem? Is it serviceable? How is it going to look in 10 years?" As I sift through the thousands of product submissions that cross my desk during the year, I keep this quote tacked to the wall as a reminder of the goals of good design. Our aim at RECORD *is to feature products that are useful, timeless, and address a problem in a new way. This is a quest that is not only rewarding for us, but we hope rewarding for you, as well.*

In fact, once a year we gather a passionate and knowledgeable jury representing our readers—architects, designers, and product experts—to choose the most outstanding products of the year. This tireless group donates a day from their busy schedules to pore over product submissions, images, and samples, to find products that answer a well-known or recently created demand in the market. This is no beauty contest—products are chosen not only for their aesthetics, but also for their sustainability, durability, ease of maintenance, and a range of other qualities that push them a step beyond the standard.

Our jury has a different relationship with the product manufacturers than our editors do, and while lead times, customer service, and price points are not part of the criteria for judging, the jury can't help but let these issues factor into their choices. Often their personal experiences with a company that was stellar, or less so, will affect their final decisions.

After all was said and done, our jury selected 125 new products







2004

that they felt deserved recognition this year. While avoiding overdesigned products, they favored offerings that combined new technologies and customization options, including a rear-projection acrylic screen that comes in lengths of up to 340 feet, and a phosphorescent glass block material that can be crafted into an array of surfaces.

For the second year in a row, our Digital Products editor Deborah Snoonian, P.E., organized a "virtual" jury to evaluate the best digital products of 2004. Her jury included Patrick Mays, AIA, principal and C.I.O. of NBBJ, Seattle, and Paul Seletsky, Assoc. AIA, director of technology, Davis Brody Bond, New York City.

Our thanks go to the jurors, participating companies, and RECORD *interns Audrey Beaton and James Murdock for their help with this year's Reports. We are eager to see what manufacturers have on the boards for 2005, and with Eames's criteria as a guide, to continue our search for the industry's most exciting new products.* Rita F. Catinella

280 **Editors' Picks**
282 **Top 10 Green Products**
285 **Digital Products**
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311 **Specialties & Equipment**
314 **Furnishings**
319 **Special Construction & Conveyance**
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322 **Electrical**

Our 2004 Product Reports Jury

Howard Brandston, LC, FIES, Hon. FCIBSE, FIALD (back row, far left), is a partner with Brandston Partnership in New York City and an adjunct professor at Rensselaer Polytechnic Institute in Troy, N.Y. Brandston has more than 40 years experience in lighting design, engineering, and electronics, having designed illumination for more than 2,500 commercial, institutional, residential, and government projects.

Thomas C. Lekometros (back row, second from left) is a principal owner and the partner in charge of design for The Lawrence Group Architects, New York. The office is part of a multidisciplinary firm that has practiced broadcast, educational, corporate, and residential architecture. Lekometros was formerly an associate at Gwathmey Siegel & Associates, where he practiced for more than 12 years.

Blaine Brownell (back row, third from left) is a LEED-certified architect and an associate with NBBJ in Seattle. Brownell is the editor of a weekly electronic journal that highlights innovative products, as well as *Transmaterial*, a catalog of materials, products, and processes that are redefining our physical environment. Brownell has roughly eight years of experience working for firms in Houston, Tokyo, Nagoya, and Seattle.

Roger Klein, AIA (back row, far right), is principal and director of architectural design at Swanke Hayden Connell Architects (SHCA), where he is responsible for overseeing the design teams of all architectural projects in the New York office, including commercial, retail, educational, and public-sector projects. Prior to joining SHCA, Klein was an associate principal at Kohn Pedersen Fox in New York City.

Morley Bland (front row, left) has been with Beyer Blinder Belle in New York City since 1991. Following her position as first executive director of the James Marston Fitch Charitable Trust, founded by the firm in 1988, she became BBB's resource director in 1998. Bland is a member of the Resource Director's Association, an organization of product and materials specialists working at architecture and interior-design firms.

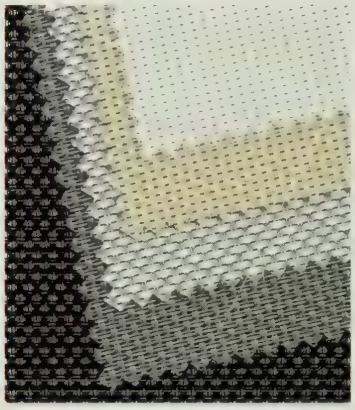
Lauren Crahan (front row, right) studied fine arts and architecture at the Rhode Island School of Design, in Providence. She has been a partner in the Brooklyn, N.Y., firm Freecell since 2000. She has worked as a project designer for Weiss/Manfredi Architects and as a project manager for Rafael Viñoly. She is an adjunct professor for the first year design studio at the New Jersey Institute of Technology, in Newark.





Editors' Picks

Our fifth annual roundup of the year's most impressive building products



EcoVeil solar-shade cloth, **MechoShade**. Top 10 Green Products, page 282.



Steelcase's Think chair is designed with a three-part "brain" and 98 percent recyclable content. [See RECORD, June 2004, page 364.]



Ductal composite, **Lafarge N.A.** Concrete & Masonry, page 292.



The Blue Ocean acrylic projection screen, **U.S. Nippura**. Specialties & Equipment, page 311.

Metalith prefabricated steel wall perimeter security system can absorb the impact of explosives and/or speeding vehicles and be customized by an architect to enhance its aesthetic. **Corrugated Metals**, Chicago. www.corrugated-metals.com **CIRCLE 200**





Integrated-display screen, **ad notam USA**. Specialties & Equipment, page 312.



Solarban 60 Starphire glass (left) is ultra-clear with the solar contro of low-e glass. **PPG**, Pittsburgh. www.ppgglazing.com **CIRCLE 201**

Several of the compelling products that caught our attention this year featured an exciting combination of materials, such as fiber optics and concrete or LEDs and glass. Others were notable for improvements in design or advancements in technology that yielded unexpected results, such as a customizable perimeter wall or a lightweight aluminum chair. As always, the true test of a product's merit will be its ability to satisfy the demands of your future projects. Rita F. Catinella



ints LED glass, **Schott N.A.** Doors & Windows, page 302.

AuraLast water-based treatment from **Jeld-Wen** protects wood windows and patio doors against wood decay and infestation. [See RECORD, April 2004, page 206.]



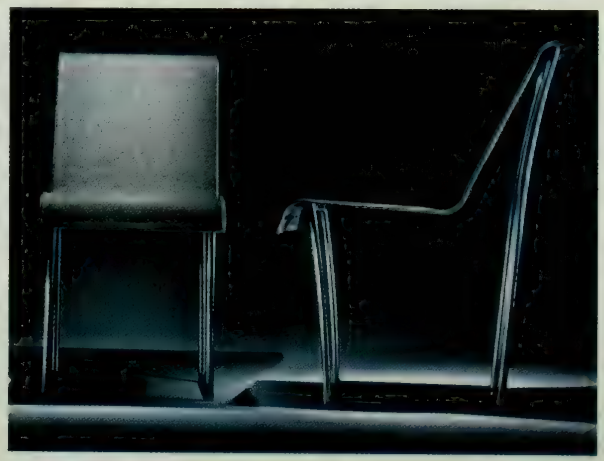


Pilkington's Eclipse Advantage reflective low-e glass combines subtle reflectivity, high visible light transmittance, and thermal- and solar-control. [See RECORD, February 2004, page 171.]



Bas-relief tiles, **Photo-Form**. Finishes, page 306.





The Superlight aluminum chair designed by Frank Gehry, **Emeco**. Furnishings, page 316.

LiTraCon translucent concrete block, LiTraCon. Concrete & Masonry, page 291.



IMAGE: COURTESY LEGAT ARCHITECTS, CHICAGO (OPPOSITE, METALITH RENDERING)

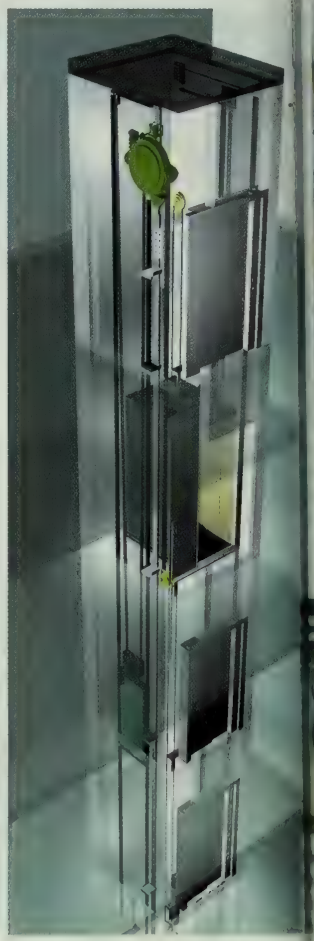
Top 10 Green Products

Third annual award highlights the year's most innovative sustainable products



MSK's semitransparent **building-integrated photovoltaic glazing element** allows visible light transmission while generating electricity. An edge-mounted electrical connection system conceals all wiring within the laminated-glass edge framing. MSK, Tokyo. www.msk.ne.jp **CIRCLE 202**

The **EcoSpace** traction elevator requi no lubricating oil and consumes 60 percent less energy than conventiona hydraulic elevators. Kone, Moline, Ill www.kone.com **CIRCLE 206**





The **ECO I Paver** is a regionally available interlocking concrete grid paver designed for porous paving applications. Protrusions on the sides of the paver ensure proper rainwater infiltration. E.P. Henry, Woodbury, N.J. www.ephenry.com **CIRCLE 203**

EcoVeil, an interior shade-screen for commercial buildings made from a thermoplastic olefin yarn called EarthTex, can be returned to the company for recycling when no longer wanted. MechoShade Systems, Long Island City, N.Y. www.mechoshade.com **CIRCLE 204**





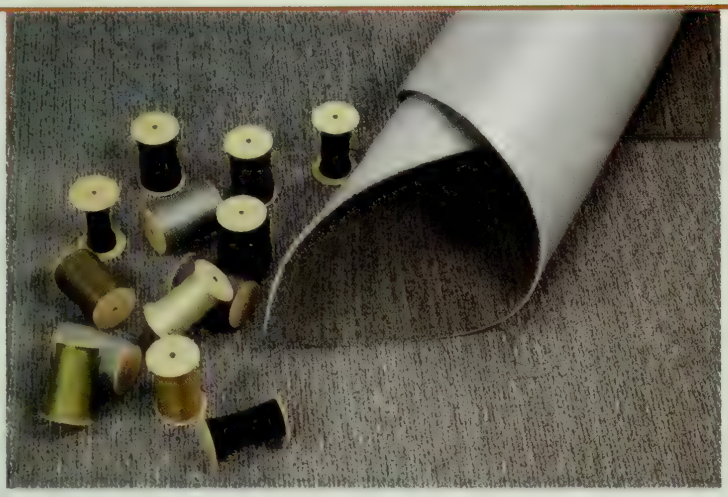
The multiple-stage **Cold Climate Heat Pump** rivals many geothermal heat pumps in performance and can operate efficiently at much lower temperatures than conventional air-source heat pumps. Nyle Special Products, Bangor, Maine. www.nyletherm.com **CIRCLE 205**

For more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Resources, then Reader Service.

At last month's GreenBuild Conference in Portland, Oregon, BuildingGreen, publisher of the GreenSpec Directory *and* Environmental Building News, *announced the year's top 10 green building products. "Reflected in our Top-10 list this year is a concern about energy," says* GreenSpec *coeditor Alex Wilson. Other issues reflected in the selections are water conservation, toxin reduction, and longer product life cycles. For more info on these products, check out www.BuildingGreen.com.* R.F.C.



Potlatch is producing **chain-of-custody Forest Stewardship Council–certified** Hem-fir and Douglas fir-Larch framing lumber, inland red cedar decking and siding, and Douglas fir and white fir plywood from three mills in Idaho. Potlatch, Spokane, Wash. www.potlatchcorp.com **CIRCLE 207**



Ethos carpet-cushion backing from C&A Floorcoverings is made from nonchlorinated polyvinyl butyral safety-glass film collected when auto windows and other safety-glass panes are recycled. The backing is 96 percent postconsumer recycled, resulting in carpet products with a total recycled content of 40–62 percent. Tandus Group, Dalton, Ga. www.tandus.com **CIRCLE 208**



inston Series CPC Collector is a residential and commercial solar heating system that is composed of 12 small compound parabolic collthat focus sunlight onto absorber tubes through which heat-transfer piped. Solargenix Energy, Raleigh, N.C. www.solargenix.com **CIRCLE 209**



The **FlushMate IV** pressure-assist toilet flush mechanism features an inner airtight flushometer tank that is pressured after the flush as the tank refills. During the flush operation, this air pressure flushes the toilet with increased velocity, improving flush performance. Sloan Valve, Franklin Park, Ill. www.sloanvalve.com **CIRCLE 210**



TimberSIL is a sodium-silicate-based pressure-treatment system for wood that relies on a mineralization process rather than toxins to prevent infestations and decay. Timber Treatment Technologies, Grosse Point Farms, Mich. www.timbersil.com **CIRCLE 211**

PHOTOGRAPHY: COURTESY BUILDINGGREEN


Keep what's on the wall
hanging in the back of their minds.
• 1000 cd/m² brightness; 3000:1 contrast ratio
• Exclusive DNIe™ technology for optimal picture quality and control
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A beautiful image leaves a lasting impression. And with Samsung's new Q-series 50" plasma, image quality has advanced to a new leve Engineered with 1000 cd/m² brightness and a 3000:1 contrast ratio, the Q-series affords stunning peak brightness, richer blacks and superior contrast definition than our previous models. And whethe your source is hi-def TV, DVD or PC, our DNIe™ technology ensures optimal picture quality. Samsung's 50" Q-series. For an image they won't soon forget.
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Digital Products

;D CAD • Rendering & visualization software • Hardware • Productivity and
:ollaboration tools • Analysis software • Integration of design and construction data

GoToMeeting is not only highly affordable, its user interface is by far one of the easiest to quickly learn and master. —*PAUL SELETSKY*



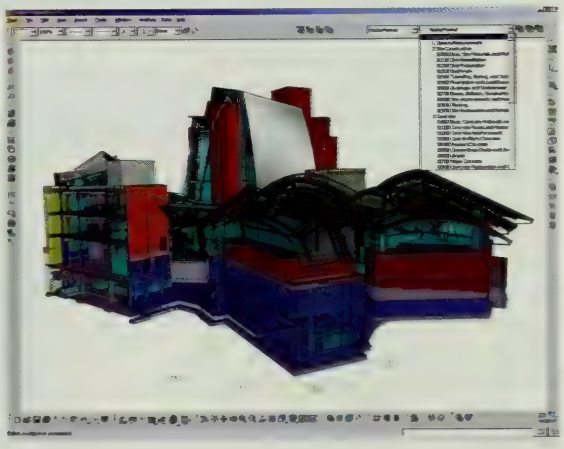
Sharing their digital world
Gehry Partners has not only packaged its high-tech Digital Project software based on CATIA for the design and construction industry, it has also set up an extensive training and education program for users who want to harness its power to make their own projects beautiful, functional, and deliverable on time. Gehry Technologies, Culver City, Calif. www.gehrytechnologies.com **CIRCLE 212**

Printing a new dimension
Imagine clicking "print" in your 3D CAD program and getting a 3D model of your design, forged from a plastic material tough enough to withstand field testing. Dimension's 3D printers offer just that for a price lower than earlier generations of the technology. The SST version submerses models in water to wash away support structures and allow "hands-free" printing. Stratasys, Minneapolis. www.dimensionprinting.com **CIRCLE 213**

N-Gons playing at CINEMA 4D
The latest version of Maxon's CINEMA 4D modeling and animation software boasts a feature called N-Gons, which allows users to develop complex models based on polygons of any number of points. The program also boasts improved "polygon knitting" (important for realistic rendering) and a more efficient interface to full-screen editing. Maxon Computer, Newbury Park, Calif. www.maxoncomputer.com **CIRCLE 214**

3D models for all
NavisWorks allows users to coordinate 3D models saved in any file format. The system is organized around a module called Roamer, which allows users to convert model files into universally readable documents. Additional modules, including the Publisher and Presenter, allow users to share files, while the Clash Detective finds interferences and helps design teams work out construction sequencing. NavisWorks, Phoenix. www.navisworks.com **CIRCLE 215**

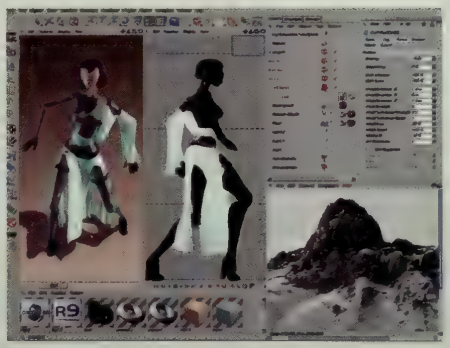
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Digital Products

3D CAD • Rendering & visualization software • Hardware • Productivity and collaboration tools • Analysis software • Integration of design and construction data

Pocketing paint matches

At the touch of a button, the Pocket Palette color reader allows users to match a paint sample to colors within the Benjamin Moore product line, storing up to 20 color matches. Benjamin Moore, Montvale, N.J. www.benjaminmoore.com **CIRCLE 216**

All you can meet

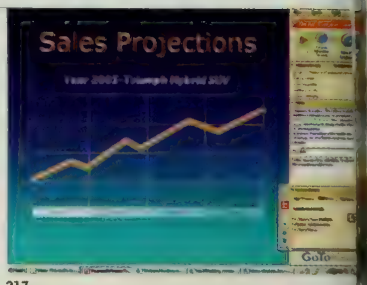
For a flat fee, Citrix offers clients unlimited online meeting time through its GoToMeeting software. The software allows users to broadcast a desktop to all attendees, as well as share keyboard and mouse controls. Citrix, Santa Barbara, Calif. www.gotomeeting.com **CIRCLE 217**

Integrating space and time

Graphisoft's Virtual Construction offers integrated modeling and estimating services. Components include a 5D planning module that lets users create presentations that integrate 3D models with time and cost estimates. Graphisoft, Burlington, Mass. www.graphisoft.com **CIRCLE 218**

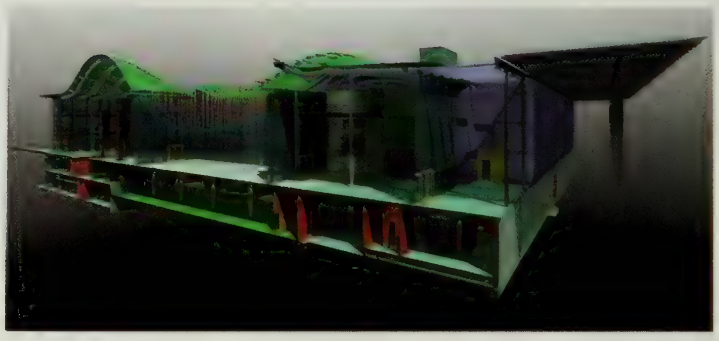
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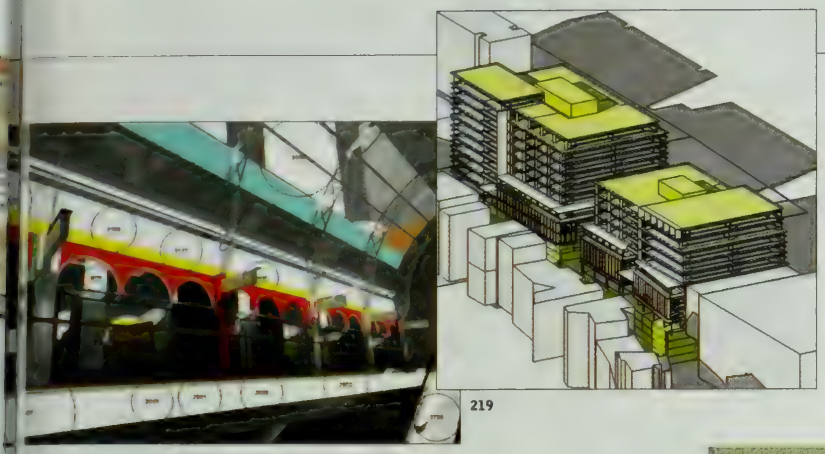
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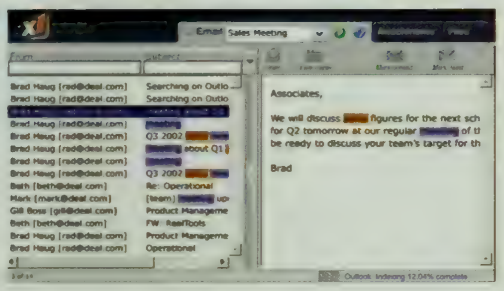
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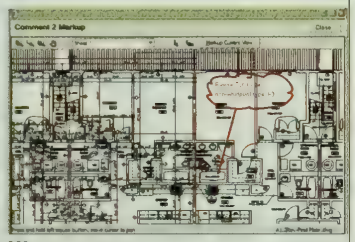
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"What-if" questions answered

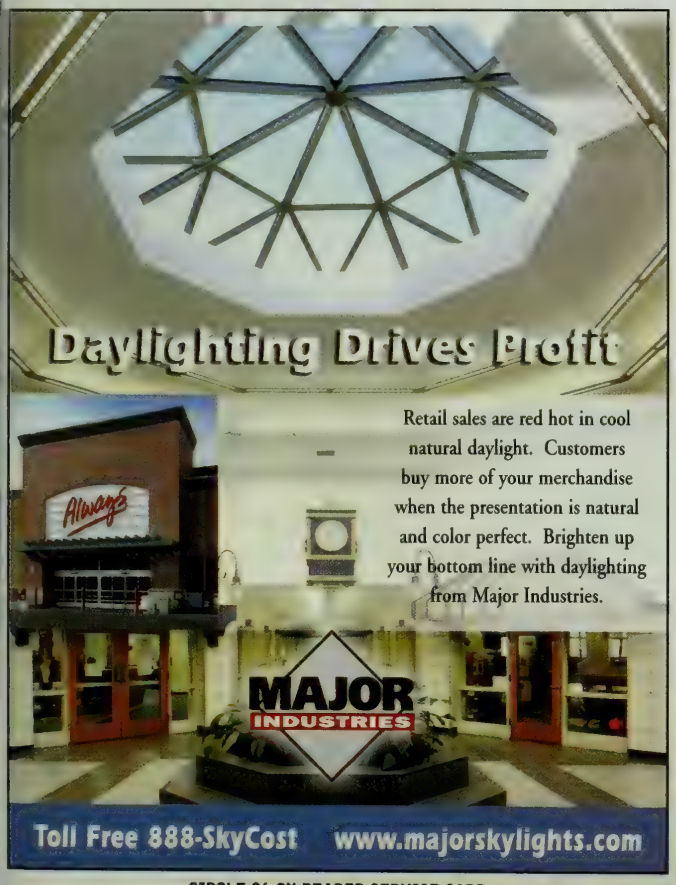
IES's Virtual Environment program integrates all aspects of building systems, performance, and assessment, allowing designers to explore what-if scenarios that could reduce operating costs and improve energy efficiency. IES, Glasgow, U.K. www.iesve.com **CIRCLE 219**

Speedy searching

Install X1 software on a computer, and the program will index the machine's entire hard drive, e-mail folders, and e-mail attachments, allowing users to locate files efficiently in little more than the time it takes to type a file name. X1 Technologies, Pasadena, Calif. www.x1.com **CIRCLE 220**

File sharing made easy

Project Website offers a secure online repository for all information and communications related to a project—everything from CAD files and schedules to task lists. Best of all, users can store as much data as they want. Project Website Services, Watertown, Mass. www.project-websites.com **CIRCLE 221**



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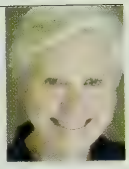
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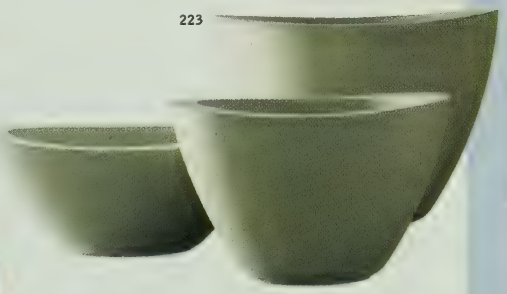
The slight slope makes the Dune Series containers a little more elegant and different. —*MORLEY BLAND*

A cutting edge doesn't cut
The Nox line, designed by Raul Barbieri, features cylindrical containers, planters, and vase trays. Made of brushed stainless steel, the products feature streamlined "no cut" rounded edges for safety. They also come with casters. Rexite, Milan. www.rexite.it **CIRCLE 222**

Containers dune right
With a graceful form inspired by the rhythmic undulations of desert sand dunes, these cast-concrete landscape containers are appropriately called the Dune Series. They range in size from a shallow wok to a 44"-high planter. Kornegay Design, Tempe, Ariz. www.kornegaydesign.com **CIRCLE 223**

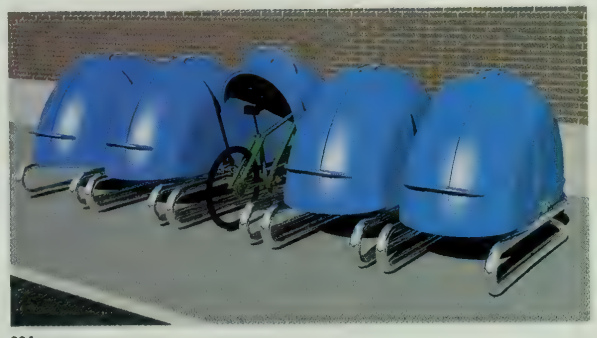


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Secure in its looks
Huntco's solution to fully covered bike storage also provides improved security. Made of high-density polyethylene, each shell-like pod is 32½" wide, 51½" high, and 74½" long. Huncto Supply, Portland, Ore. www.huntco.com **CIRCLE 224**



224

Lightweight and lighthearted
Made from molded polypropylene and stainless steel or aluminum, the Take 5 seating, table, and planter line offers lightweight solutions for a variety of commercial outdoor and indoor spaces. Landscape Forms, Kalamazoo, Mich. www.landscapeforms.com **CIRCLE 225**



225

Take a load off
Offering the attractiveness and warmth of wood, yet boasting construction that's rugged enough for use in the most demanding public space, the Hudson Bench is 100 percent Ipé wood. Forms+Surfaces, Carpinteria, Calif. www.forms-surfaces.com **CIRCLE 226**



226

Holier than other tables
The Tolt table and bench combine the "classic" material of acacia wood with a "high-tech" Corian tabletop. Featuring a retro 1970s feel, the perforated tabletop allows for easy drainage and cleaning. Ideas for Living, Albuquerque, N.M. www.extremis.be **CIRCLE 227**



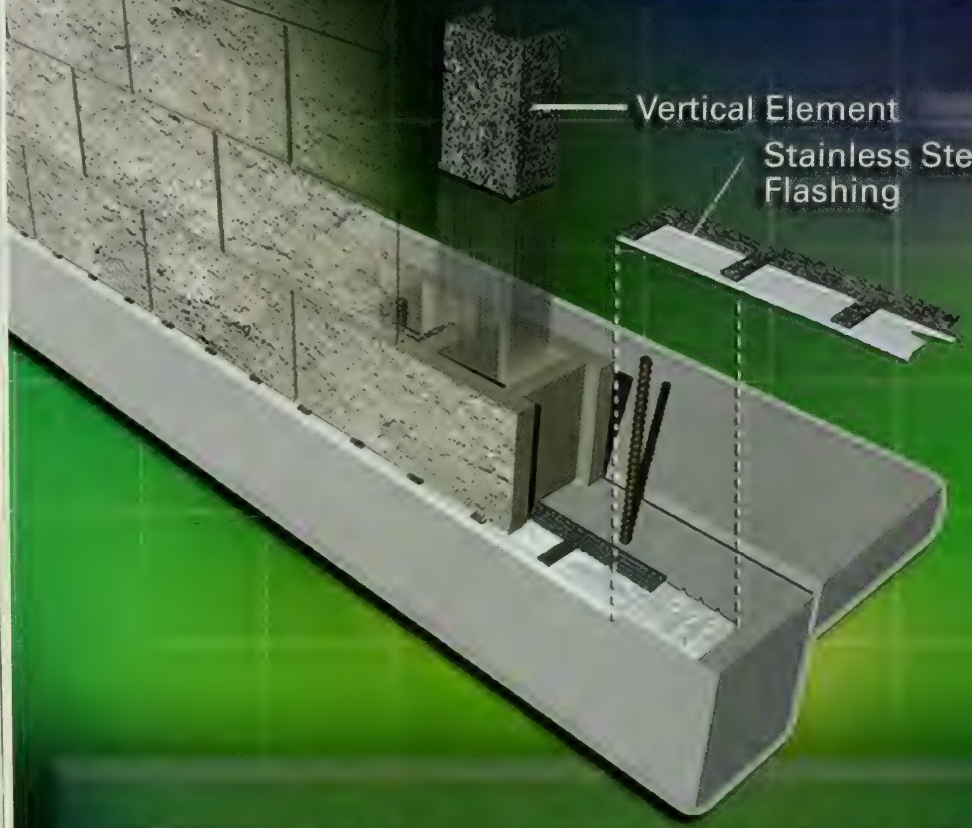
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Concrete & Masonry

Concrete materials • Cast-in-place concrete • Precast concrete • Grout • Concrete restoration & cleaning • Unit masonry • Cast stone • Masonry assemblies



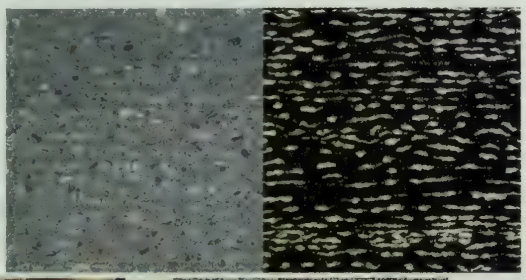
Finding visually satisfying masonry products for contemporary designs is difficult. —*ROGER L. KLEIN*

Light-transmitting concrete
LiTraCon is a translucent concrete building block that combines the material with thousands of optical fibers that run side by side between the two main surfaces of the block. The blocks are load bearing, provide the same effect with both natural and artificial light, and have the same strength and qualities as common concrete blocks. LiTraCon, Aachen, Germany. www.litracon.com **CIRCLE 228**

Concrete block wall protection
The BlockNet system by Mortar Net protects single-wythe concrete-block walls from the damage caused by water infiltration. It is composed of specially shaped, 3⅜"-deep, stainless-steel drainage strips with an integrated drip edge, horizontal mesh element, and rear water dam, plus a separate vertical mesh element. Mortar Net USA, Gary, Ind. www.mortarnet.com/ar **CIRCLE 229**

Fiber-reinforced concrete
Extremeconcrete cast-concrete material is made from high-quality raw ingredients blended with a choice of fibers. The material can be used to create custom fixtures, surfaces, furnishings, and accessories for office, retail, hospitality, and entertainment environments. Twelve standard finishes are available, as well as custom colors. Meld USA, Raleigh, N.C. www.extremeconcrete.com **CIRCLE 230**

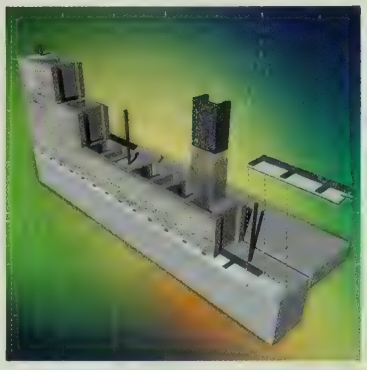
Greener drainage mat
Made from 100 percent recycled materials, CavClear Stone Mat provides a full-height continuous drainage area behind exterior stone that will allow water to reach the flashing and weep system. CavClear/Archcovations, Hudson, Wis. www.cavclear.com **CIRCLE 231**



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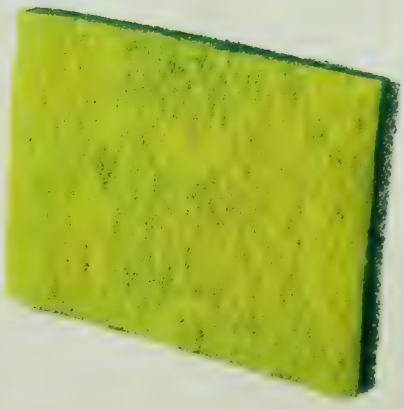


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Concrete & Masonry

Concrete materials • Cast-in-place concrete • Precast concrete • Grout • Concrete restoration • Unit masonry • Cast stone • Masonry assemblies

Improved grout and cement

Lafarge's Agilia Blockfill self-consolidating grout is for use in partially grouted and solid-grouted walls. The grout is capable of flowing both vertically and horizontally under its own weight, and has a lower water/cement ratio and significantly reduced shrinkage compared to conventional masonry grout. Ductal composite, also from Lafarge, is significantly stronger than normal concrete: It has a compressive strength of 20,000 psi (six to seven times stronger) and a flexural strength of 4,000 psi (three times stronger). Lafarge N.A., Herndon, Va. www.lafargenorthamerica.com **CIRCLE 232**

Concrete color stain

Lithochrome Tintura Stain is a new waterborne, low-VOC, reactive product that penetrates and bonds with concrete for color that will not peel. Unlike acid stains, this material can be applied to horizontal or vertical cured concrete without time-consuming acid residue removal and disposal. L.M. Scofield, Los Angeles. www.scofield.com **CIRCLE 233**

Exterior wall panels

Hanover's new line of exterior wall panels bridge the gap between concrete and natural stone. The stone units can be prepared with either slots or grooves that will accommodate many styles and anchoring systems. Hanover Architectural Panels, Hanover, Pa. www.hanoverpavers.com **CIRCLE 234**

Concrete restoration

Xypex Megamix is a thick repair mortar for the patching and resurfacing of deteriorated concrete. It has been specifically formulated to produce superior bond, low shrinkage, chemical durability, and high strength. Xypex Chemical, Richmond, British Columbia. www.xypex.com **CIRCLE 235**

Insulated masonry form

The IMF (insulated masonry form) wall system is cost competitive with ICF, precast, and tilt-up. IMF reduces the amount of concrete delivered to the job site, is nontoxic, and offers a thermal efficiency in excess of R-20, excellent noise suppression, fireproof construction, no formaldehyde/CFCs, and mold/mildew-resistance. CBIS/Korfil, West Brookfield, Mass. www.cbisinc.com **CIRCLE 236**



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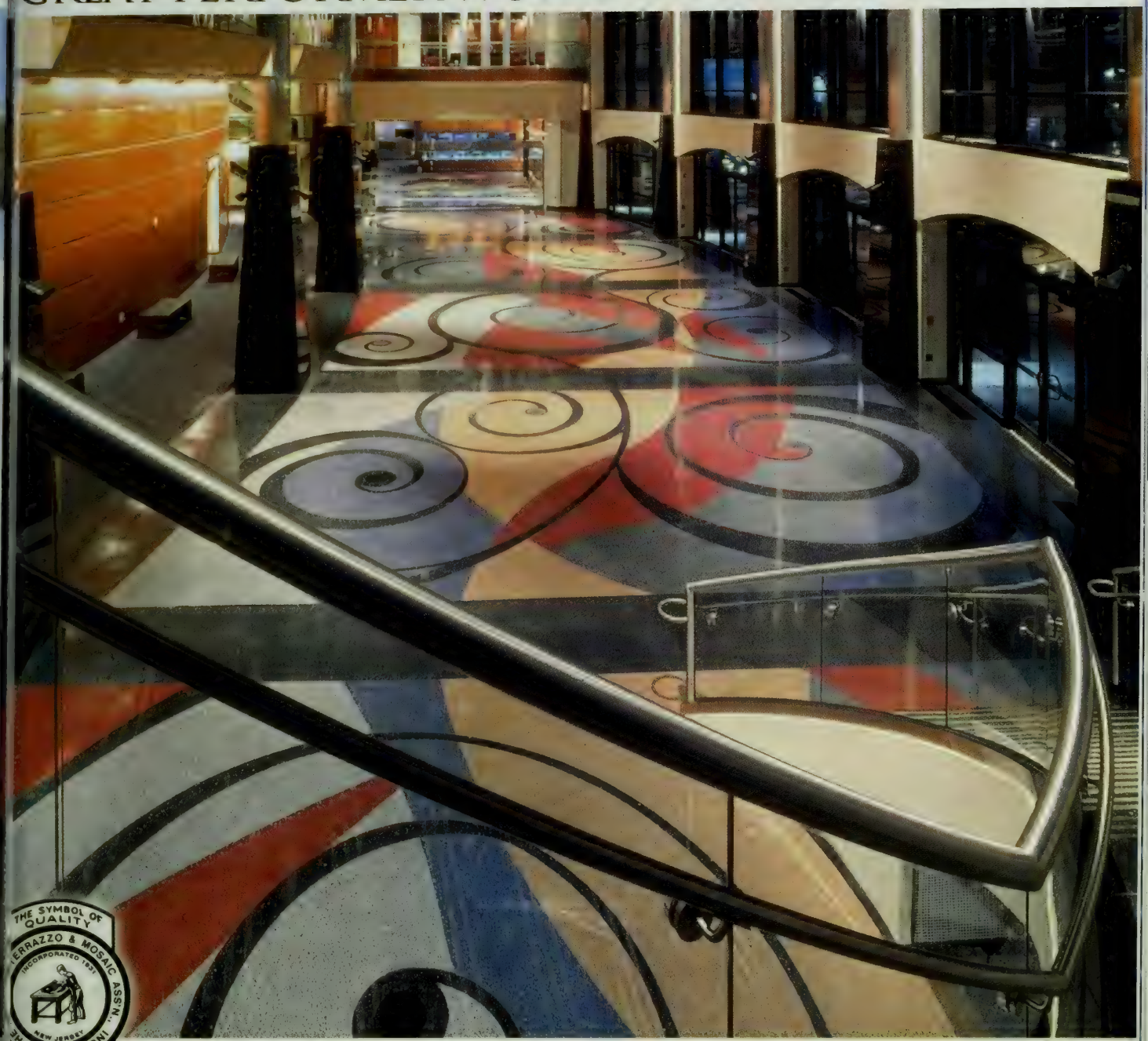
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UC Santa Cruz, Engineering Building, Santa Cruz, CA, USA; Architect: Anshen + Allen, Los Angeles, CA, USA

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Pep/Stage is an interesting improvement on the polycarbonate system for making walls, plus its ability to be used as flooring is great. —*LAUREN CRAHAN*

Attractive tropical toppings

The Tropical Veneers collection features handcrafted veneers containing slivers of organic materials from South America, such as coconut and totumo shell, plantain bark, and tagua seed. These exotic materials are embedded in an MDF base that comes in a variety of colors and three different thicknesses. Applications include walls, doors, ceilings, screens, and furniture. Architectural Systems, New York City. www.archsystems.com CIRCLE 237

High-performance honeycombs

Pep and Stage are 3form's latest honeycomb panel products. Pep is suitable for vertical and horizontal surfacing, while Stage is specifically engineered for flooring. Both are ultra-lightweight, class A fire-rated, and highly structural. 3form, Salt Lake City. www.3-form.com CIRCLE 238

Economical glazing

Suitable for wall and roof applications, Spectra lite 16 is an economical translucent glazing material made from high-impact-resistant polycarbonate. Internal chambers create an insulation value comparable to insulated glass. Available in a rainbow of colors as well as clear and milky white, Spectra lite 16 is ideal for nursery and kindergarten projects. Rodeca, Mulheim-Ruhr, Germany. www.rodeca.de CIRCLE 239

Prefabricated possibilities

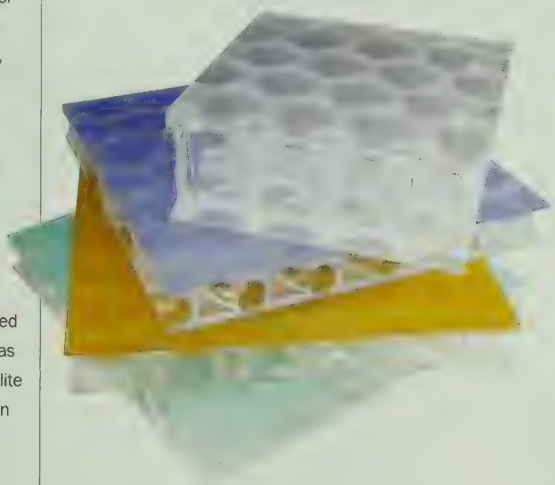
The X-Tend2 prefabricated handrail system features DecorCable's X-Tend SS mesh panels premounted on 316 SS frames. Panels are available in lengths up to 6 feet long and come in three heights and several mesh densities. For easy installation, the X-Tend2 system features "no-drill" mounting brackets. Carl Stahl DecorCable, Chicago. www.decorcable.com CIRCLE 240

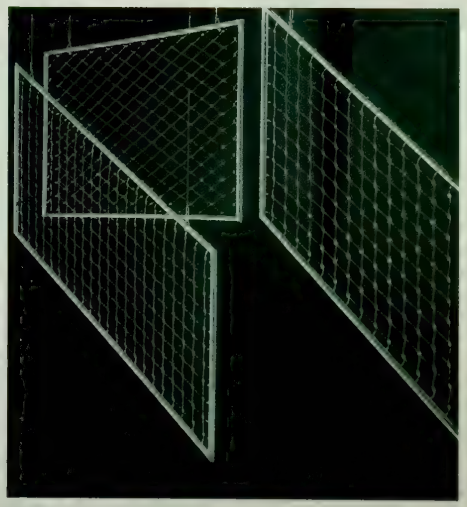


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Metals, Woods & Plastics

Architectural woodwork • Structural plastics • Railings & handrails • Wood veneer • Plastic fabrications • Solid polymer fabrications

Self-supporting curves

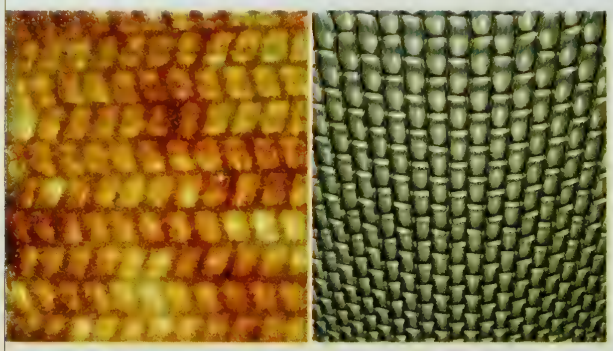
Panelite's Cast Polymer Series of translucent honeycomb panels boasts self-supportive, light-transmitting, curved and straight panels. The straight panels feature a translucent colored resin cast onto a polymer woven grid core (left), while the curved panels feature clear or colored resin cast onto an aluminum overexpanded core (right). Panelite, Los Angeles. www.e-panelite.com **CIRCLE 241**

Pearly fluorescents

Made of hardy Eastman PETG resin, known for its fire- and impact-resistance, the Pearls hard surface collection offers six super-bright fluorescent colors and a vibrant iridescent surface finish. Designtex, New York City. www.dtex.com **CIRCLE 242**

Strength on both sides

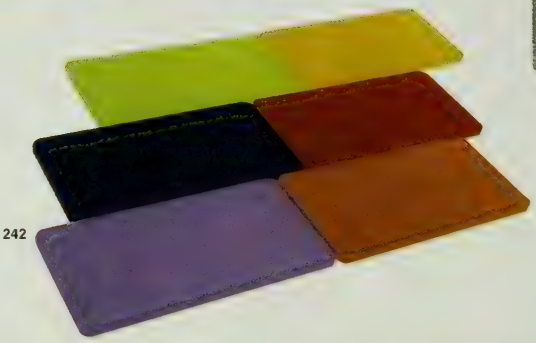
Hybrid glulam beams feature laminated veneer lumber on the outermost top and bottom laminations. A balanced layup means the beam retains structural value even if installed upside down. APA-The Engineered Wood Association, Tacoma. www.glulambeams.org **CIRCLE 243**



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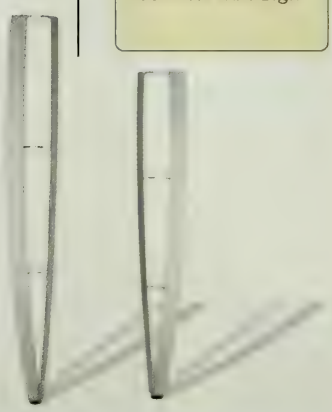
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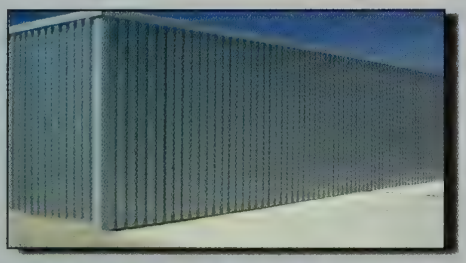
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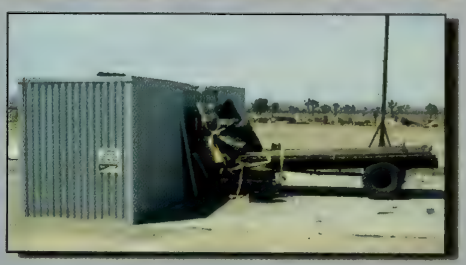
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CIRCLE 244

Terra-cotta facade system
Known as Terrart, NBK's suspended facade system is made from large-scale terra-cotta elements that are ventilated at the rear. By combining classic techniques along with the latest technologies, the system can work with closed surfaces, open glass constructions, and to create transparent optical effects. The Terrart-Flex system is a patented substructure consisting of 15 components that can integrate the facade into any classic or modern wall construction. NBK Keramik, Emmerich, Germany. www.nbk.de CIRCLE 245

Concealed fastener panels
Concept Series concealed fastener panels feature a complementary asymmetrical geometry and identical side joinery permitting integration of multiple profiles within a single elevation for horizontal or vertical application. They are available in three 12" and three 16" widths. Centria, Moon Township, Pa. www.centria.com
CIRCLE 246



245



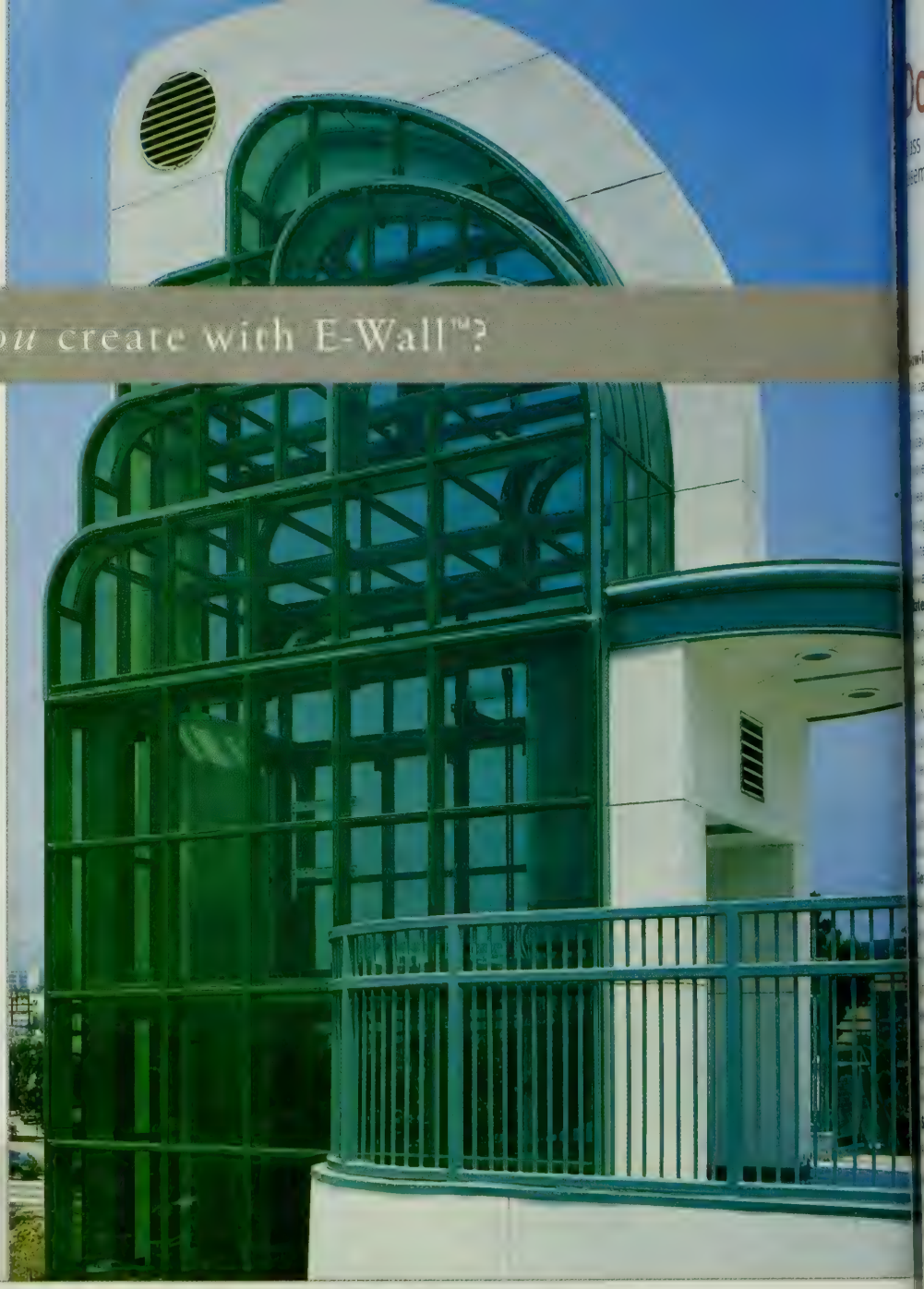


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Gore-Tex meets windows? The boundary between inside and outside is becoming all the more transparent.

—*BLAINE BROWNELL*



Glow-in-the-dark glass

Luna cast glass contains a phosphorescent chemical that absorbs light during the day and glows for hours at night. Supplied in flat sheets and bricks, Luna is ideal for bar tops, feature walls, flooring, or any interior or exterior area. Architectural Systems, New York City. www.archsystems.com **CIRCLE 247**

Rated aluminum systems

Originally developed in Europe, the Aluflam aluminum door and window system has been completely fire-tested for the North American market. The system is comprised of custom-extruded and -filled aluminum framing combined with a clear, wire-free glass laminate. Aluflam N.A., Huntington Beach, Calif. www.aluflam-usa.com **CIRCLE 248**

Get a better view

Pella Vivid View screens feature a patent-pending high-transparency screen fabric from W.L. Gore Associates, the manufacturer of Gore-Tex fabric. Vivid View screens allow 50 percent more natural light and up to three times the ventilation compared to standard fiberglass screens. Pella, Pella, Iowa. www.pella.com **CIRCLE 249**

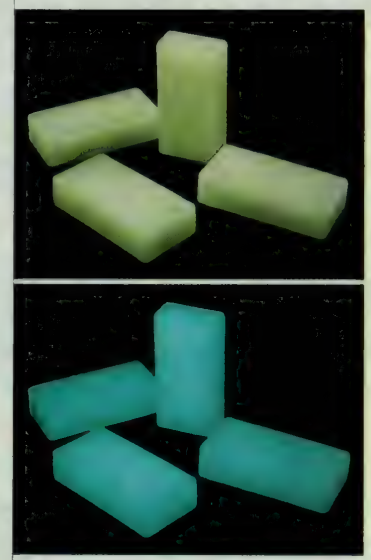
Sawtooth cast glass

Profile 3D cast glass features a trio of cast-glass textures available in unlimited colors and transparent, frosted, opaque, and sfumato finishes. Based on a glass for the Sten Frenke house designed by Richard Neutra, Profile can be made using 100 percent recycled materials. Joel Berman Glass Studios, Vancouver, Canada. www.jbermanglass.com **CIRCLE 250**

Luxurious leather pulls

Rockwood's line of leather door pulls feature English Bridle leather for interior and exterior applications, and Upholstery leather for interior applications. Both are available in straight and offset versions and can be wrapped onto an ergonomic oval-door-pull shape. Rockwood Manufacturing, Rockwood, Pa. www.rockwoodmfg.com **CIRCLE 251**

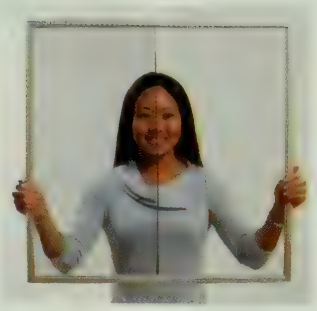
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Doors & Windows

Glass • Translucent wall & roof assemblies • Fire-rated glazed wall/door assemblies • Metal windows & doors • Storm sash & screens • Door hardware

Glass of bubbly

WaterGlass is a highly translucent glass material that suspends air bubbles within the sheet through a proprietary casting process. Architectural Systems, New York City. www.archsystems.com **CIRCLE 252**

Fire-rated, minimal profile

SGG Swissflam Structure is a fully tested 60-minute flush-joint system that provides a clear vision area and high-impact safety, and makes vertical joints virtually invisible. Vetrotech Saint-Gobain, Auburn, Wash. www.vetrotech.com **CIRCLE 253**

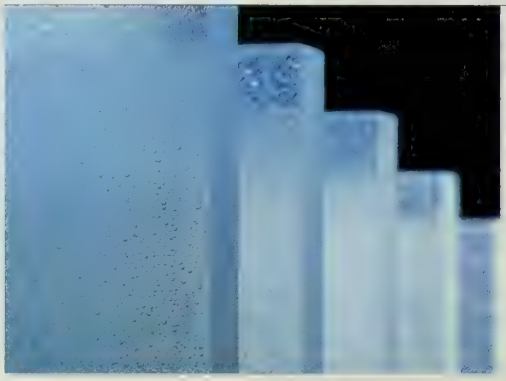
Translucent aerogel panels

Kalwall + Nanogel translucent aerogel panels provide a U-value of R-10, up to 20 percent light transmission, and improved sound attenuation. Kalwall, Manchester, N.H. www.kalwall.com **CIRCLE 254**

Floating points of light

The LightPoints LED system incorporates LEDs into transparent glass conductor plates protected by a top and bottom layer of laminated glass, eliminating the need for any visible wiring. Schott N.A., Elmsford, N.Y. www.us.schott.com **CIRCLE 255**

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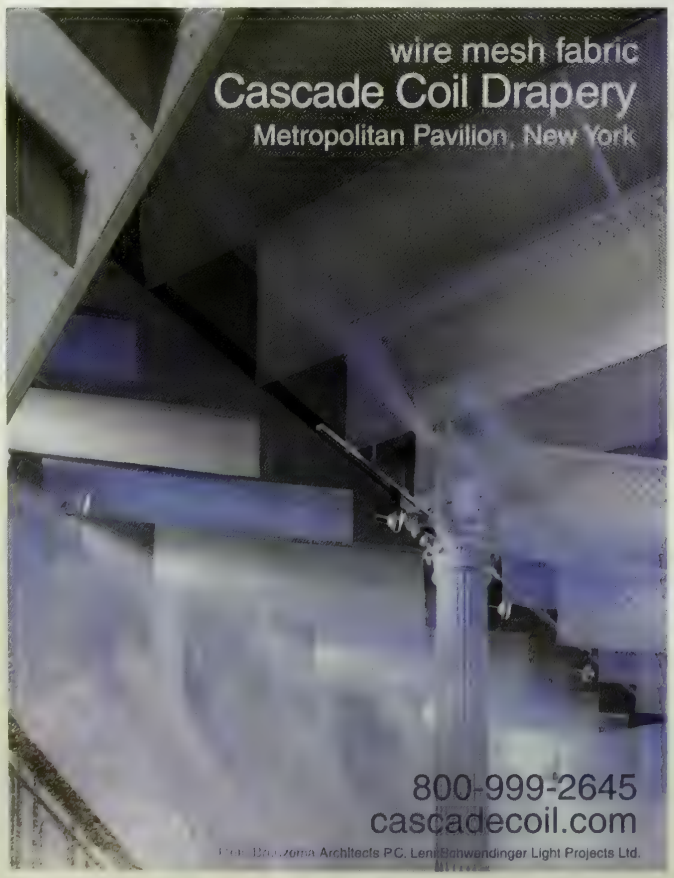
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le • Wall coverings • Carpet tile • Resilient flooring • Indoor/outdoor carpet •
e-setting materials & accessories • Special wall surfaces



I'm excited to see the reuse of the old technology of gypsum block as a finish material [for Bas-relief tiles from Photo-Form]. —*LAUREN CRAHAN*

chival inspiration

er the next three years, an exclusive ensing agreement between Designtex d the Guggenheim Museum will result several collections of upholstery, drap- fabrics, wall covering, carpeting, and nslucent acrylic paneling inspired by e museum's collections and archives. e first collection, entitled Singular rms, was inspired by a recent exhibi- n at the museum. Designtex, New York y. www.dtex.com **CIRCLE 256**

lue-free carpet back

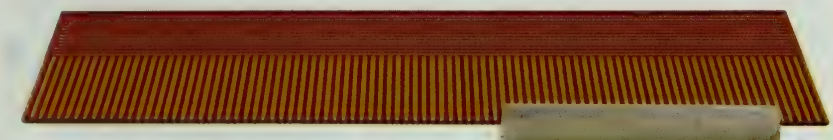
actionBack is a high-friction coating plied to carpet backings that minates the need for traditional wet ues or the newer "peel and stick" y adhesives. Available on all Milliken odular carpets, the glue-free system duces installation time and expenses hile improving indoor air quality. lilliken Carpet, LaGrange, Ga. ww.millikencarpetsamplestudio.com **RCLE 257**

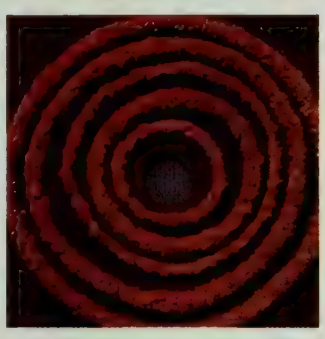
lodern Astroturf

lynyl Shag indoor/outdoor flooring, the rst tufted product from Chilewich, is vailable in 3-foot widths and in five bold tripes, incorporating bright vinyl yarns nat appear to have an anodized finish. hilewich, New York City. www.plynyl.com **IRCLE 258**

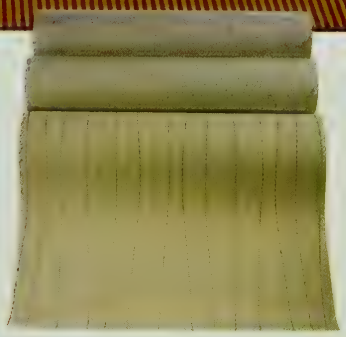
hree-dimensional rugs

opissimo, designed by Nani Marquina, is nade of 100 percent hand-tufted wool nd is guaranteed to be child-labor-free. he rug is practically flat, while featuring voluminous polka dots that are available either multicolored or in two tones of the same color. The Terence Conran Shop, New York City. www.nanimarquina.com **CIRCLE 259**





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Finishes

Tile • Wall coverings • Carpet tile • Resilient flooring • Indoor/outdoor carpet • Tile-setting materials & accessories • Special wall surfaces

Brooklyn in the house

Designtex's new collection of products designed by the Brooklyn, New York, design studio twentytwo includes nine wall-covering patterns (several shown here); three upholstery patterns; and three drapery patterns for hospitality, corporate, or residential applications. Designtex, New York City. www.dtex.com CIRCLE 260

Snapshot tiles

Using a patent-pending Photo-Cast process, Photo-Form can create bas-relief tiles from any type of two-dimensional image. Ceramic tiles or gypsum-based polymer tiles with a metallic finish are available for wall-mounted applications. Photo-Form, Scottsdale, Ariz. www.photo-form.com CIRCLE 261

Send a strong message

The Pause wall-covering pattern is composed of oversize commas and periods that refer to the digital stream of electronic transmissions, including e-mails, chat rooms, and instant messaging. The large-scale vinyl wall covering comes in orange, gray, and blue. KnollTextiles, New York City. www.knolltextiles.com CIRCLE 262

Fabric-inspired glass tile

Quilt-glass tile, designed by Erin Adams, features a retro geometric look for residential or commercial interiors. Available in 36 color options, the handcrafted tile is created using fused glass in a design that resembles a quilted fabric. Ann Sacks, Portland, Ore. www.annsacks.com CIRCLE 263

Designing with fire

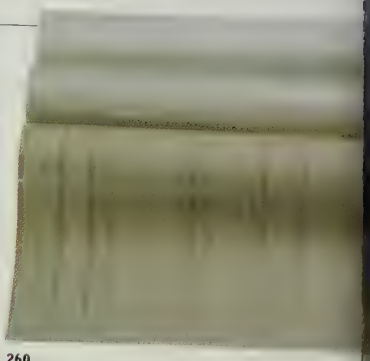
When thick terra-cotta pieces are fired, oxygen does not reach the center, leaving the natural gray of the original clay in that area. Vertically cut, the tile features a gray surface and terra-cotta-colored striping on its edges. Named Terra Serena, this listello is designed for finishing and decorative applications in outdoor or indoor areas. EX: Inc., New York City. www.exinc.org CIRCLE 264

Stain-fighting grout

Laticrete SpectraLock Grout with Microban locks in color and inhibits the growth of stain causing bacteria, mold, and mildew. Laticrete, Bethany, Conn. www.laticrete.com CIRCLE 265



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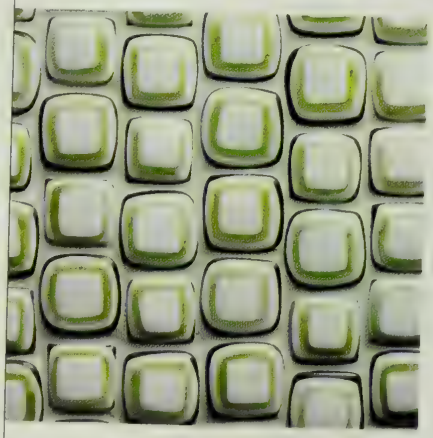


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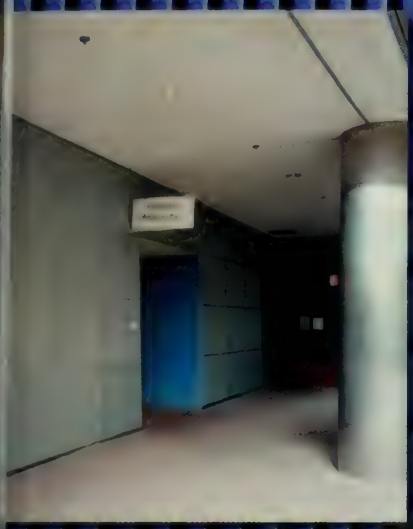
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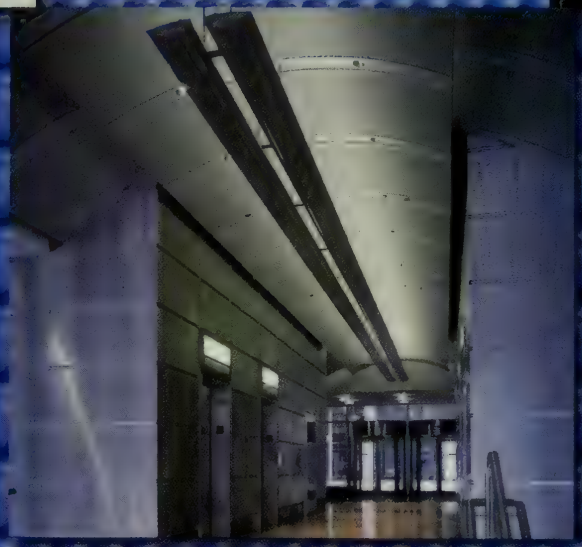
Metal Architectural Panels



Ceiling Systems



Wall Systems



Column Covers

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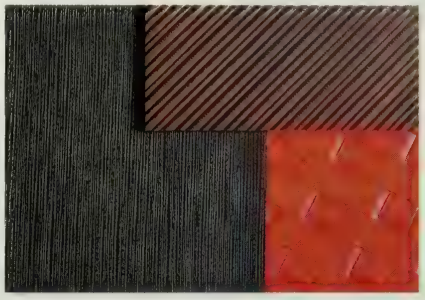
Fresh take on wood wall panels
The Embossed Wood Collection of dimensional textured panels for vertical applications is available both single- and double-sided in 14 relief patterns. Architectural Systems, New York City. www.archsystems.com **CIRCLE 266**

Plug-and-play
The Focus tile from Viva Ceramica features a dimpled white base tile that can be fitted with whimsically patterned inserts. Italian Trade Commission, New York City. www.italytile.com **CIRCLE 267**

Oxidized-steel-like tiles
Cor-Ten replicates the look of naturally oxided steel and is available in a dark-blue-iron finish and a rusty bronze color. Tau Ceramic, Castellon, Spain. www.tauceramic.com **CIRCLE 268**

Tough and luminous vinyl
Lonseal Nova UV sheet vinyl combines a tough, UV-cured urethane finish with a light-shifting range of colors and 20 percent recycled material content. Lonseal, Carson, Calif. www.lonseal.com **CIRCLE 269**

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Residential appliances • Kitchen hoods & ventilation • Wardrobe & closet specialties • Toilet compartments • Audiovisual equipment • Kitchen & bath cabinets



Anything we can do to improve bumper systems is a good thing. —*ROGER L. KLEIN*

Super suction centralized
Aluera is a built-in central vacuum system offering permanent HEPA filtration. Powered by a 520-air-watt motor, it screens particles as small as dust mites, pollen, mold spores, and tobacco smoke, preventing their reentry into the home. Electrolux Home Care Products, Webster City, Iowa. www.electrolux.com **CIRCLE 270**

Futuristic flat filtration
Om is an almost vertical, completely flat glass hood. The glass is silk-screened on the back in plain colors but can be customized with patterns and decoration; it is less sensitive to finger marks and is easy to clean. Highly efficient, it is also quieter than conventional hoods. Elica, Ancona, Italy. www.elica.com **CIRCLE 271**

How deep is your Blue Ocean?
Providing a 3D portrayal of digital video and graphics, and asymmetrical projection for viewing from both sides at once, the Blue Ocean screen is finely cast in a high-grade acrylic between two ultra-clear, optical cell-cast-acrylic panels that are scratch-resistant. U.S. Nippura, Charlotte. www.usnippura.com **CIRCLE 272**

Tall, Starck, and handsome
The Starck 1.2.3. tall cabinet coordinates with every ceramic piece in Duravit's extensive Starck inventory. The cabinet is made of compressed three-ply chipboard with a melamine resin decor pressed on both sides and is finished in a matt varnish. Duravit, Duluth, Ga. www.duravit.com **CIRCLE 273**

Bumpered up to first class
Ideal for hospitality, food service, healthcare, and other busy public spaces, the Latitude Bumper System consists of an aluminum mounting channel that accepts impact-absorbing Santoprene thermoplastic rubber extrusions, which can be fitted with decorative strips. The system is available in stock lengths for on-site cutting or as a pre-engineered kit. Forms+Surfaces, Carpinteria, Calif. www.forms-surfaces.com **CIRCLE 274**



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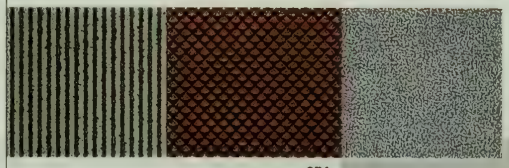
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Specialties & Equipment

Residential appliances • Kitchen hoods & ventilation • Wardrobe & closet specialties • Toilet compartments • Audiovisual equipment

Well-dressed closet

The Varia closet, designed by Paolo Piva, is defined by a series of vertical aluminum studs, with shelves and sleek-fitting containers for alternative storage options. Poliform USA, New York City. www.poliformusa.com **CIRCLE 275**

Floats like a cloud

The whisper quiet SIU401-22 sculptural island-style hood is a sleek combo of stainless steel and glass. Sirius Range Hoods USA, Buffalo, N.Y. www.siriushoods.com **CIRCLE 276**

Graffiti ghostbuster

Perfect for heavy abuse, vandal-prone environments, the scratch- and impact-resistant Sierra Series is solidly colored throughout to avoid ghosting. Bobrick Washroom Equipment, North Hollywood, Calif. www.bobrick.com **CIRCLE 277**

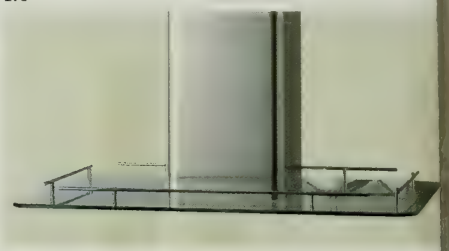
Smoke and mirrors

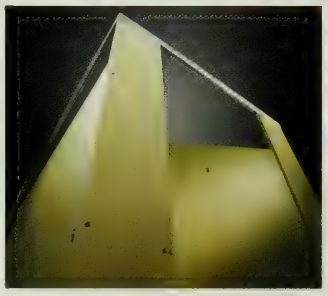
An integrated-display screen that utilizes thin-film transistor technology appears in a mirror when on, and disappears completely when off. ad notam USA, New York City. www.ad-notam.com **CIRCLE 278**



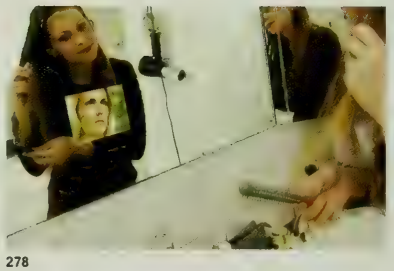
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The Nung chair is sustainable and very inviting looking.

—MORLEY BLAND

Colorful collaboration

Allsteel's partnership with Pantone means that any of the more than 1,900 colors in the Pantone for architecture and interiors group or the 1,100 colors in the Pantone Matching System can be applied on Allsteel's Terrace office system tiles. Allsteel, Muscatine, Iowa. www.allsteeloffice.com **CIRCLE 279**

Supportive mesh chair

The design of the Liberty chair transforms traditional mesh into an adaptable and supportive material that combines all the benefits of traditional mesh with the body-friendly support found in highly contoured structural foam cushions. Humanscale, New York City. www.humanscale.com **CIRCLE 280**

Bamboo cocoon

The curvilinear shape of the Nung chair cradles the user in layered, recursive rings of bamboo that build on and support each other. Its bamboo fibers are sealed together with an extremely durable, environmentally friendly epoxy that contains 60 percent less VOCs than other resins. Xeno Objects, Austin, Tex. www.xenoobjects.com **CIRCLE 281**

Always in style

The Timeless chair's seat and backrest are a single stretch of leather attached to a chromed-metal frame, accentuating its curvilinear silhouette. Flexform, New York City. www.flexformusa.com **CIRCLE 282**



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283



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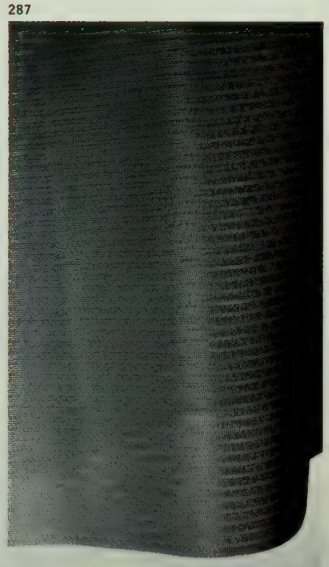


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Soft wall partition

Soft Wall is a flexible partition prefabricated from 600 thin layers of a soft, translucent, nonwoven textile. The wall measures a mere 1" in length when compressed and extends to a length of 20' or more when expanded. The material is being designed to be flame-, U.V.-, and chemical-resistant, as well as 100 percent recyclable and made with recycled content. molo design, Vancouver. www.molodesign.com **CIRCLE 283**

Letter perfect

The k chair has a tubular steel frame with a matte chrome finish and consists of three removable parts for easy shipping. Upholstered in Woodnotes fabrics, the removable cover is a combination of paper yarn and cotton and is available in five colors. Centro Modern Furnishings, St. Louis. www.centro-inc.com **CIRCLE 284**

Got it covered

The Flori chair and ottoman, designed by Werner Aisslinger, features a steel base and a back seat grip in varnished aluminum. It has both a nonremovable internal nylon cover and a removable external cover in fabric or leather. Modern Living, Los Angeles. www.modernliving.com **CIRCLE 285**

Streamlined workstation

Vox Office workstation was designed to meet the needs of the shrinking executive office footprint. To fit into the new long, lean office design, Vox Office is designed as an elegant L-shaped office surface (wrapped in wood veneer) that can be personalized to the individual's needs. Nienkämper, Toronto. www.nienkamper.com **CIRCLE 286**

Sailworthy curtain fabric

Cadena, designed by Suzanne Tick, is made of high-tenacity polyester borrowed from the marine industry that can withstand even the harshest of salty, sunny, or wet locations. KnollTextiles, New York City. www.knolltextiles.com **CIRCLE 287**

Furnishings

Office furniture • Dormitory furniture • Multiple seating • Room dividers • Blinds, shades & shutters • Hotel & motel furniture • Manufactured casework

Greener protection

For a description of the EcoVeil solar shade cloth, see page 282. **CIRCLE 204**

Lightweight, strong effect

The Superlight aluminum chair, designed by Frank Gehry, weighs in at 6½ pounds and is available with an industrial felt pad or in brushed/anodized aluminum. It stacks by unclipping the skin from the structure. Emeco, Hanover, Pa. www.emeco.net **CIRCLE 288**

Shore-inspired seating

The curved lines of the Strip chair, designed by Carlo Colombo, were inspired by the shape of a shell. The polyurethane structure is available in white or black, and with a revolving base or chromed stationary legs. Poliform USA, New York City. www.poliformusa.com **CIRCLE 289**

Flexible office worker

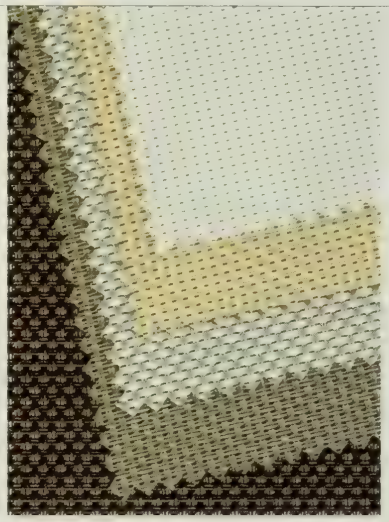
Topo's "flex-fit" walls feature unlimited adjustment within an 18" range to increase or decrease worksetting size without additional components. Users may open or close their work space with sliding window screens between desks and roller screens between work-stations to facilitate collaboration or concentration. Metro, Oakland, Calif. www.metrofurniture.com **CIRCLE 290**

Turn over a new leaf

The Leaf seating collection, designed by the Swedish design partnership of Claesson Koivisto Rune, features a light-weight, painted steel frame that supports a fixed cushion folded over on itself to striking effect, particularly with two-tone upholstery (shown). Living Divani, Los Angeles. www.modernliving.com **CIRCLE 291**

Sustaining student life

Sustain residence-hall furniture features an appearance, strength, and hardness similar to oak, but it is constructed of renewable, ecofriendly rubberwood. Intended to weather years of heavy use, the line features solid wood construction, integrated drawer pulls with replaceable drawer fronts, 100-pound steel-ball-bearing drawer slides, and joinery details such as dovetails, mortise, and tenon. KI, Green Bay, Wis. www.ki.com **CIRCLE 292**



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* Approximate Value for Fully Captured Mullion	** Based on 40% Spandrel & 60% Vision	*** May vary according to frame & glass configuration

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Siedle ushers in the brave new world of fingerprint-based security control with a Minimalist design. —*BLAINE BROWNELL*

293



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Space-saving elevator system
ThyssenKrupp claims the company's ISIS elevator saves, on average, 60 square feet of building space per elevator. The geared traction system will serve two to 50 stops, and features a lift system that includes a synthetic hoist rope made of Dupont Kevlar that is stronger and more flexible than traditional steel rope, and an advanced set of synthetic modular traction sheaves. The sheaves, one third the size of typical steel sheaves, allow for reduced machine and motor sizes and for ISIS to be contained completely within the elevator shaft. ThyssenKrupp Elevator, Frisco, Tex. www.thyssenkrupp.com **CIRCLE 293**

Powerful photovoltaics
RWI Schott Solar's semitransparent building-integrated photovoltaic panels for windows, facades, and skylights lower energy costs, provide glare protection, supply heat insulation, and help reduce greenhouse gases. Independent studies show that the thin-film panels provide 20 percent more energy per rated wattpeak unit than other solar-cell technologies. Schott North America, Elmsford, N.Y. www.us.schott.com
CIRCLE 294

Large-span retractable roofs
OpenAire has developed a proprietary aluminum building system that can span 150 degrees and extend to any length desired. These structures have thermally broken frames and incorporate a retractable roof capable of opening 50 percent of the rafter length. OpenAire, Mississauga, Ontario. www.openaire.com
CIRCLE 295

Security at your fingertips
Siedle's fingerprint-based access control for residential and small commercial applications features a compact design and simple operation. Each finger read is compared with stored print information of entitled persons. Siedle Communications Systems, Broomall, Pa. www.siedleusa.com **CIRCLE 296**

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Mechanical

Plumbing fixtures • Water filtration equipment • Fittings, trim & accessories



The WT.RX basin offers a striking shape and material presentation. —*THOMAS C. LEKOMETROS*

Luxe cylindrical basin
Alape's WT.RX basin is a single streamlined cylinder that stands approximately 3' tall. Made of scratchproof glassed steel, WT.RX is available as a full pedestal in either a round or rectangular pillar shape. Alape, Duluth, Ga. www.alape.com CIRCLE 297

Laminar wall-mount faucets
Kohler has paired the clear water delivery of the laminar technology with the sleek, paired-down style of the Stillness and Purist wall-mount faucet designs. Kohler, Kohler, Wis. www.kohler.com CIRCLE 298

Drinking water purifier
Capable of removing bacteria, viruses, and protozoa, the Purefecta Drinking Water Purifier is the first drinking-water system certified as a microbiological purifier for residential, health-care, and light commercial applications. Kinetico, Newbury, Ohio. www.kinetico.com CIRCLE 299

Egg-inspired bath fixtures
Inspired by the oval shape of an egg, Conran & Partners have designed Aveo, a collection of bathroom fixtures from Villeroy & Boch, including a lavatory, bidet, toilet, and tub. Villeroy & Boch, Monroe Township, N.J. www.villeroy-boch.com CIRCLE 300

Tub for two
Norman Foster's first design for Hoesch includes single- or double-seated bathtubs in four sizes. The high neck area of the double-seated tub offers a modern twist on the look of the traditional galvanized tub. Hoesch, Ronkonkoma, N.Y. www.hoesch.de CIRCLE 301

Updating the original
The Axor Steel collection of stainless-steel bath and kitchen faucets, shower products, and accessories has a new streamlined look that combines the curved and circular shapes of the earlier version with straight lines, flat surfaces, and square angles. Hansgrohe, Alpharetta, Ga. www.hansgrohe-usa.com CIRCLE 302


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Electrical

Interior & exterior luminaires • Lamps & ballasts • Sound reinforcement • Dimming control • Stair, walkway, roadway & parking area luminaires • Fiber-optic lighting

This collection of new lighting products will be of great value to lighting designers and their future projects.

—HOWARD M. BRANDSTON



Minimalist pendant

Soli Zontio comes with or without an etched-glass diffuser suspended within the center of the rectangular extruded-aluminum form. The pendant features two T5 lamps and two 28-watt or 54-watt lamps that direct light up and onto the diffuser and ceiling plane while a slit of light emanates onto the work surface below. Lightolier, Fall River, Mass. www.lightolier.com **CIRCLE 303**

Adjustable area lighting

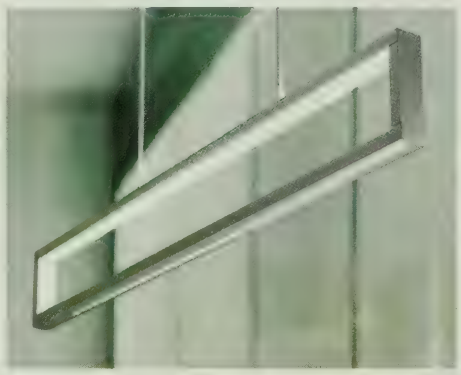
The pole top design for Bega's Adjustable Gantry System presents a clean, simplified design solution, addresses a variety of road and pathway applications, and adheres to I.E.S. Full Cutoff requirements. Bega/US, Carpinteria, Calif. www.bega-us.com **CIRCLE 304**

Energy-efficient options

Sylvania Prominence is illuminated by solid-state LEDs enclosed in polycarbonate tubing and controlled by a patented low-voltage power supply. Prominence uses 75 percent less energy than neon and is virtually maintenance-free. Sylvania HaloBright halogen lamps can be used almost anywhere incandescent lamps are used, and fit in most standard fixtures. Watt for watt they deliver higher lumens than standard incandescent lamps and have a 3,000-hour average rated life, up to four times longer than incandescents. Osram Sylvania, Danvers, Mass. www.sylvania.com **CIRCLE 305**

Camouflaged speakers

Martin Architectural's new Flat panel speakers offer top audio reproduction in a slim speaker construction that integrates seamlessly into the interior design of a space. A collection of themed designs is available, or custom designs can be created to match any concept. For true camouflaging or flush mounting, specifiers can print or paint directly onto the Flat speaker itself. Martin Architectural, Sunrise, Fla. www.martinarchitectural.com **CIRCLE 306**



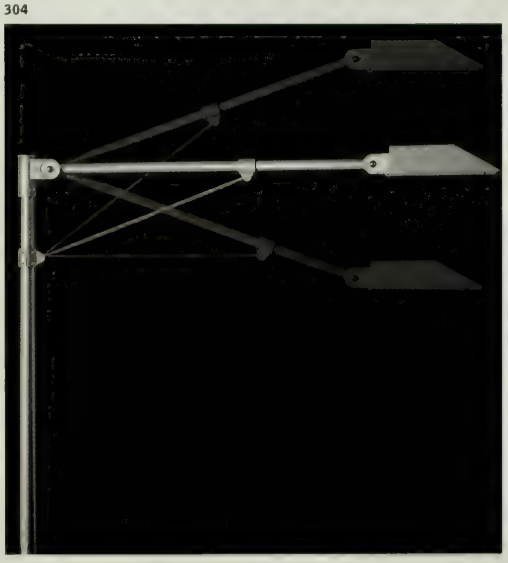
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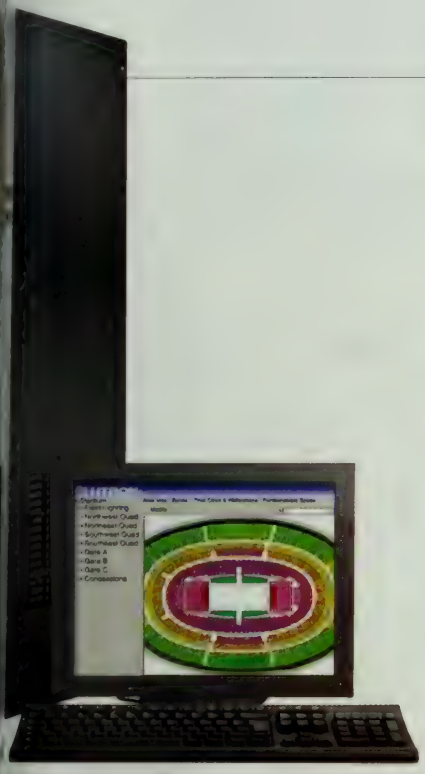
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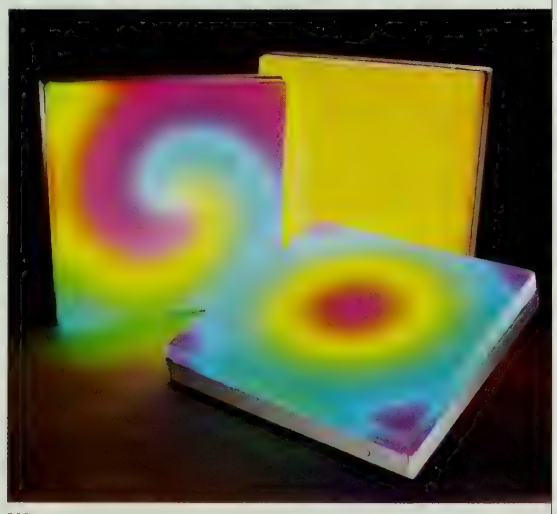


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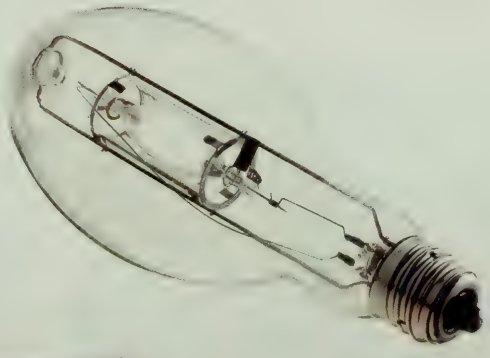
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Centralized lighting control

The Grafik 7000 centralized lighting control system offers advanced hardware capabilities and customizable user interfaces for flexible and seamless integration of dimming, switching, window-shading systems, and daylighting. Lutron Electronics, Coopersburg, Pa. www.lutron.com **CIRCLE 307**

Wildly colorful LED option

iColor Tile FX works independently or as part of a large-scale, multitile installation. Each 2' x 2' panel incorporates 144 individually addressable tricolor nodes that are powered to create images with light. Color Kinetics, Boston. www.colorkinetics.com **CIRCLE 308**

An illuminating wardrobe

Retail Rod is a fluorescent rod system for retail-store clothing displays and residential closets that evenly distributes light emitted from a choice of linear T2 and T5 fluorescent lamps. Ardee Lighting, Shelby, N.C. www.ardeelighting.com **CIRCLE 309**

LED signage and cove lighting

LightScript is an LED-based illumination solution for channel lettering in corporate identity signage applications. LED-based signage solutions deliver up to 80 percent energy savings; greatly reduced maintenance costs; and a wide variety of colors, font sizes, and design capabilities. Destiny CV is a cove luminaire that incorporates high-flux LEDS and advanced solid-state lighting technology to provide an even surface glow while projecting a farther throw. TIR Systems, Burnaby, British Columbia. www.tirsys.com **CIRCLE 310**

High color rendering

Uni-Form Natural White pulse-start metal-halide systems feature a color-rendering index greater than 90, an improvement over ceramic metal-halide lamps. When used with an electronic ballast, the systems can be dimmed to 35 percent of rated lamp power for energy savings. Venture Lighting, Solon, Ohio. www.venturelighting.com **CIRCLE 311**

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Electrical

Interior & exterior luminaires • Lamps & ballasts • Sound reinforcement • Dimming control • Roadway & parking area luminaires • Fiber-optic lighting

Colorful downlight

Candéo is a decorative, high-performance, recessed downlighting product available in white or saturated colors, including sky blue, sea green, and sand. Gotham Architectural Lighting, Conyers, Ga. www.gothamlighting.com **CIRCLE 312**

Multitasking landscape light

The SL-43 in-ground/above-ground landscape lighting luminaire is ideal for pedestrian areas to wall wash buildings, illuminate signs, light landscape grounds, and accent pathways. The fixture provides superior resistance to corrosion, the effects of UV radiation, and inclement weather. Allscape, Santa Ana, Calif. www.alllighting.com **CIRCLE 313**

Rapid-start ballast

The T5HO high-range voltage AccuStart 5 ballast is intended for applications from 347 to 480 volts. It features programmed rapid-start technology to provide long lamp life in frequently switched applications, such as occupancy sensors. Universal Lighting Technologies, Nashville. www.universalballast.com **CIRCLE 314**

Troubleshooting device

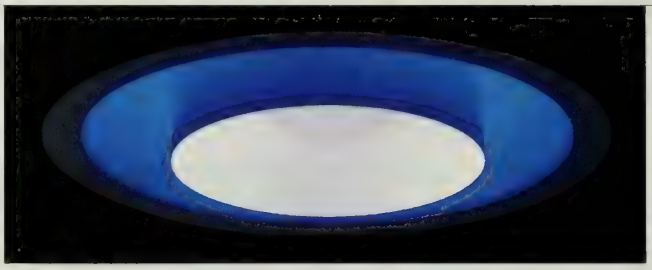
I.Q. On Board is a troubleshooting LED signal device for outdoor commercial lighting fixtures. When the lamp does not go on, a LED will light if the failure is due to the lamp; if the LED does not go on, that means the ballast has failed, allowing for the correct component to be repaired without delay. Beacon Products, Sarasota, Fla. www.beaconproducts.com **CIRCLE 315**

Fiber-optic downlights

EFO is the only fiber-optic light source to provide highly energy efficient downlighting with the focused luminance and directional optics of MR series lamps, in a price-competitive system. Fiberstars, Fremont, Calif. www.fiberstars.com **CIRCLE 316**

Soundmasking floors

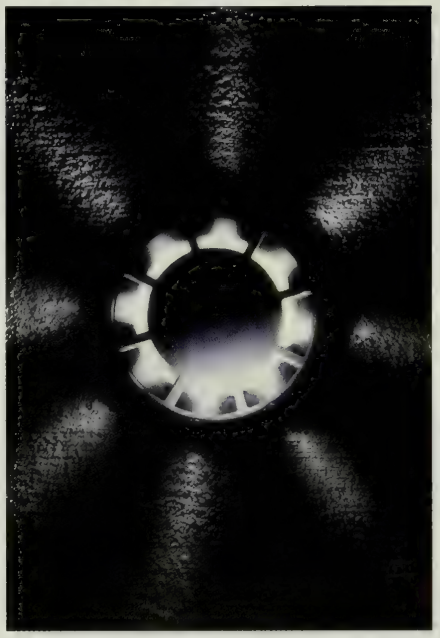
The DS2490LP (low profile) soundmasker is a dual-driver device for use in cavities as shallow at 1¼", combating the threat of eavesdropping through raised-access floors and from below the area of concern. It also provides protection in ceiling cavities as shallow as 5". Dynasound, Norcross, Ga. www.dynasound.com **CIRCLE 317**



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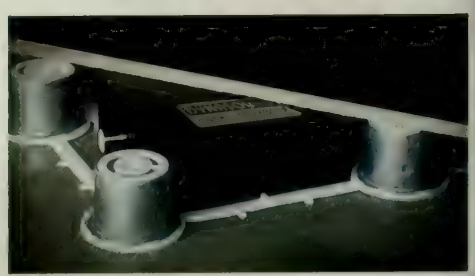
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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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Program title: **"Designing for security: Glass technology for blast protection," sponsored by Solutia Inc. and Viracon, (12/04, page 261)** **124SPONH**

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Program title: **"The art and science of good ventilation," sponsored by Broan-NuTone, (12/04, page 267)** **124SPONG**

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2.	a	b	c	d	**7.**	a	b	c	d
3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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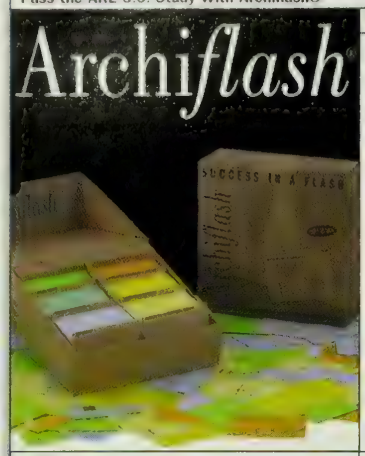
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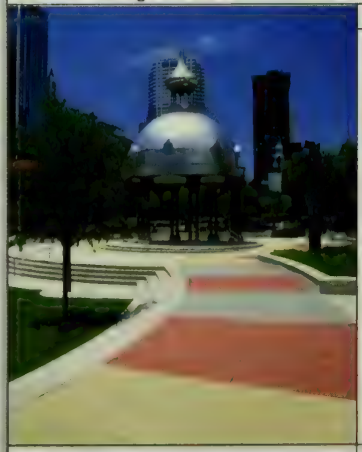
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4 Masonry



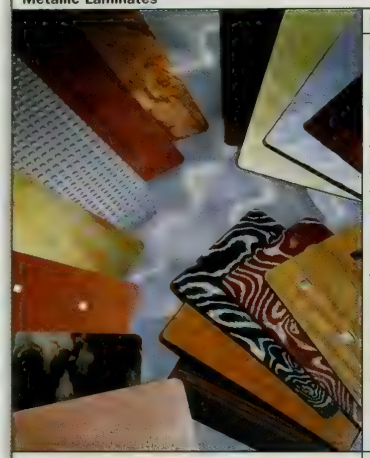
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5 Metals



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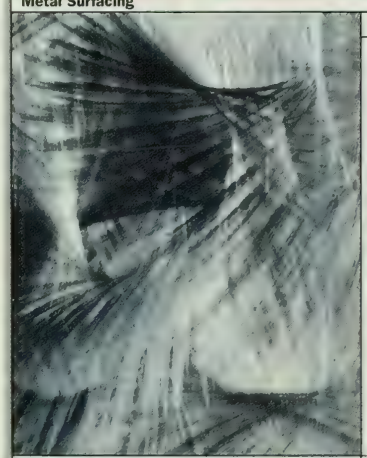
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Architectural Products



6 Wood & plastics

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Icynene Inc.

High-Performance Insulation



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East Coast Lightning Equipment

Metal Snow Guards



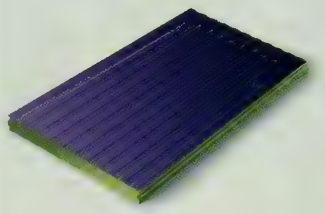
7 Thermal & moisture protection

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Metl-Span

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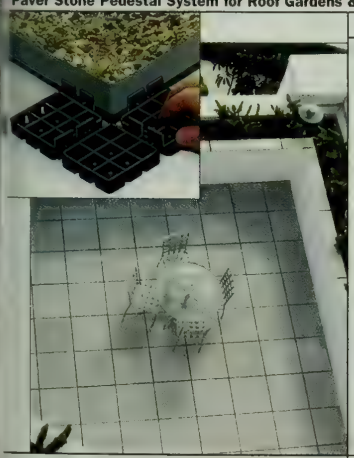
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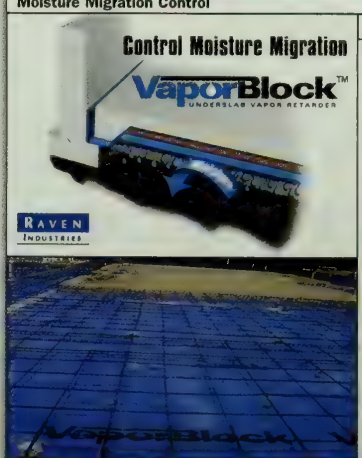
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Eliason® Corporation

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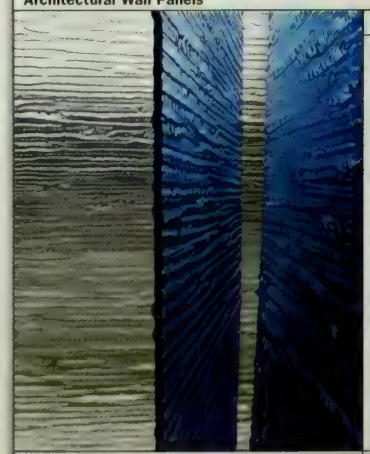
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glass panels shown here are used in
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also perform as a façade to hide th
concrete wall. Product description
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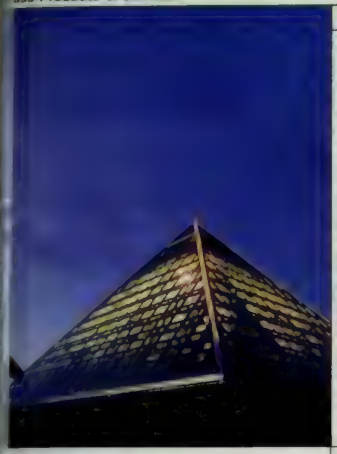
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Technical Glass Products

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www.fireglass.com 183

Panelfold, Inc.

Closet Doors



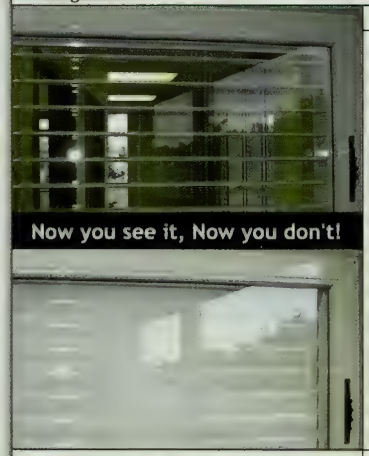
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Unicel Architectural Inc.

Pivoting Blinds



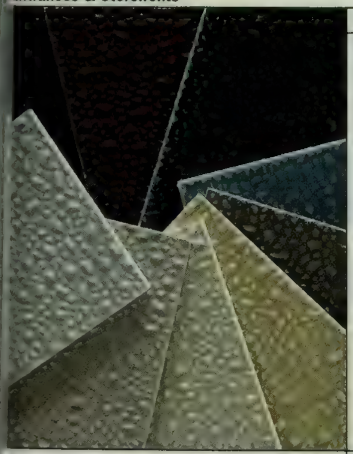
8 Doors & windows

Unicel Architectural Inc. has developed a unique patented glazing product: Vision Control®. With this custom-designed unit, you can finally enjoy total control of light, privacy, and sound without having to worry about the cleaning. Unlike ordinary Venetian blinds installed separately from the glass, Unicel's pivoting blinds made of extruded aluminum are mounted inside a hermetically sealed glass unit offering you 100% dust-free and germ-free louvered glazing. Vision Control blinds are operated using a small hand crank, thumbwheel, motorized switch, or computer: control at your fingertips, cord-free and string free. Ideal in partitions, doors, sidelights, windows, skylights, and more.

www.visioncontrol.qc.ca 184

Special-Lite, Inc.

Entrances & Storefronts



8 Doors & windows

Special-Lite, Inc. has updated the standard colors available for SpecLite 3® FRP material to include more neutral, earth tone, and classic architectural colors. Six of the nine standard colors are new: Sandstone, Seawolf, Slate Grey, Military Blue, Boysenberry, and Hartford Green. Existing standard colors of Beige, Light Grey, and Dark Bronze remain unchanged. Custom FRP colors are also available to match any architectural color scheme, subject to minimum order requirements. The company's established collection of Kynar colors has also been updated and includes an exact match for the nine new standard FRP colors.

www.special-lite.com 182

VETROTECH Saint-Gobain

Door & Wall Sections



8 Doors & windows

VDS Framing System combines narrow steel profiles with fire rated glass from VETROTECH Saint-Gobain to provide the maximum vision, flexibility, safety, and stability. Door and wall sections function as fire barriers offering increased lighting and visibility without compromising fire safety. Listed with ITS (Warnock-Hersey) as a transparent wall. Manufactured in the USA, the innovative design allows for shortened construction times. Contact VETROTECH Saint-Gobain for all your fire rated safety glass needs.

www.vetrotech.com 185

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TO ADVERTISE: Contact Deidre Allen
T: (212) 904-2010 / F: (609) 426-1357
deidre_allen@McGraw-Hill.com

Weather Shield

Telescoping Patio Doors — 800-477-6808

8 Doors & windows



Weather Shield's Telescoping Patio Door offers a view up to 24-ft.-wide, 10-ft.-tall. The ultimate entertaining solution, the door brings the outdoors in, instantly doubling, tripling—or more—a room's capacity. It has up to six panels (three per side). Both end panels are fixed. A three-channel sill guides panels into place. When fully open, operable panels slide behind fixed panels. For more information visit Weather Shield's Web site or call them at 800-477-6808.

www.weathershield.com — 186

Gyford Productions

Dynamic Building Interiors — 800-487-32

9 Finishes



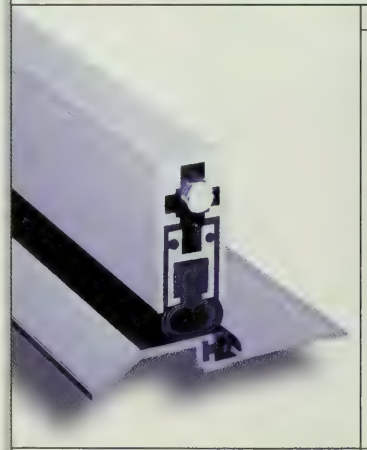
Aesthetics, durability, easy clea and maintenance are key factors designing building interiors, coun and workspaces in conference ro lobbies, and lunch areas. Super st Trespa Virtuon® panels have b specifically developed for creati unique and memorable workpla pleasant, dynamic, and motiva With Virtuon, superior toughness superb looks are not mutually ex sive. It is available in over 50 c including 15 metallics, and also a depth and dimension to any int with six available textures: silk, s rhino, ribbon, rock and bark. Its flexural strength and elasticity perfo well in high-impact environments.

www.trespanorthamerica.com

Zero International, Inc.

Automatic Door Bottoms — 800-635-5335

8 Doors & windows



Automatic door bottoms, designed & built to last. Tested through 5 million cycles, they are engineered for easy, precise installation, with a minimum of parts subject to wear. Quality construction to renowned ZERO standard makes these gaskets the choice for superior performance and unequaled service life. Double neoprene seals and a patented spring action, automatically drop and retract in a scissors-like motion as door is operated. Fax number 800-851-0000.

www.zerointernational.com — 187

L. M. Scofield Company

Concrete & Cementitious Flooring — 800-800-99

9 Finishes



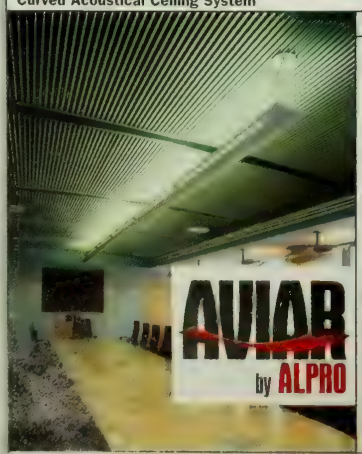
Stylish Scofield flooring systems: beauty and durability, concrete cementitious toppings provide sty flooring for high traffic areas offices, lobbies, public spaces, fo service, and retail areas. Scofi Systems offer diverse choices—ra ing from monochromatic toppings translucent, antique stains for fa finishes and dramatic graphics. En info@scofield.com.

www.scofield.com

Alpro Acoustics, A Division of Gordon

Curved Acoustical Ceiling System

9 Finishes



AVIAR is a fully engineered ceiling system that combines soaring decorative expression and optimal acoustical performance. Versatile in concept, AVIAR may be curved, vaulted, or undulating in a free form, according to the designer's vision. AVIAR integrates a stable extruded aluminum suspension system with Alpro corrugated metal panels and acoustical backers, and factory contoured perimeter trims. 100% in-house fabrication assures a perfectly installed fit and finish, and a flawless color match of all components. Even sprinklers, air distribution, and lighting may be incorporated for a complete, fully integrated system. Let Alpro Acoustical Systems' design professionals help you realize your vision for a uniquely expressive design.

www.alproacoustics.com — 188

Musson Rubber Co.

Impact Wall Protection — 800-321-238

9 Finishes



Musson has released a new catal featuring the latest products in impa wall protection. They include flat w guards in three heights for high-traf areas. Also, handrails in three differe profiles, sculpted, flat, and cylindric which meet ADA guidelines for safe and support. And surface-mount corner guards in three styles to prote any possible corner situation. All a easily installed and constructed heavy aluminum retainers.

www.mussonrubber.com — 19

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deidre_allen@McGraw-Hill.com

New England Wholesale Hardwoods, Inc.

Hardwood Flooring & Decking | 800-343-6394

9 Finishes



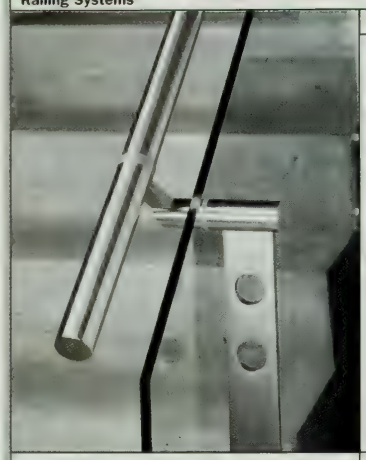
You seldom find such a time-saving, one-stop experience as that which New England Wholesale Hardwoods, Inc. (NEWH) offers via their Web site. By simply logging on, you can quickly review their extensive product line of domestic and exotic pre-finished and unfinished hardwood flooring, decking, and modular decking systems. NEWH also offers engineered and laminate flooring, dimensional lumber, mantels, stair parts, moulding, medallions, wood grilles, and vents as well as installation and finishing supplies, including the premier Livos Naturals finishing products. NEWH is certain that through their quality product line, invaluable information, great pricing, and timely deliveries, they can save you time and money.

www.floorings.com | 192

HDI Railing Systems

Railing Systems | 717-285-4088

10 Specialties



The high-end d line™ railing system from Denmark, is now available in the U.S. exclusively through HDI. d line is made of the highest quality stainless (AISI 316) for use in any environment. Features include custom bending, modular engineering for fast on-site installation, and quick order turn-around to meet construction deadlines. Complete supply and installation service is available throughout North America, which includes *inox*™, CIRCUM™, HEWI Nylon® and d line railing systems.

www.hdirailings.com | 195

Cooper Lighting

Floodlights

10 Specialties



The Lumiere Monaco 6000 family of small-scale, HID in-ground floodlights (39 W-175 W), for architectural/commercial applications, utilizes the Venterra™ heat and water management system, providing reduced lens temperatures and protection from the outdoor elements. Lumiere's exclusive Beam-Driver™ aiming system provides easy, precision aiming. The internal lamp module tilts 0° to 15° and rotates a complete 360°. Drive-over rated to 5,000-lb. Visit Cooper Lighting's web site for more information. Email talktous@cooperlighting.com.

www.lumierelighting.com | 193

K-Pro Specialty Products

Chalkboards & Tackboards

10 Specialties



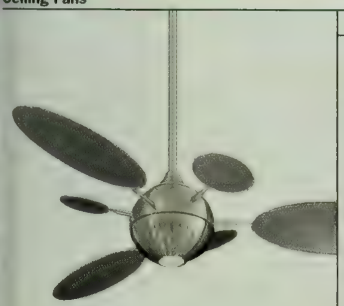
ProSteel™ chalk and marker boards by K-Pro feature the new porcelain on steel presentation surface for quality and performance characteristics unsurpassed in the marketplace: excellent chalk and marker pen adherence; erases easily with soft dry cloth or felt eraser; surface is acid, fire, stain, and scratch resistant; warranted for the life of its installation; requires minimal care and maintenance; steel holds magnets and magnetic teaching aids; available in a variety of colors; resurfacing grade sheets available. ProSteel chalk and markerboards are factory assembled with no seams in standard sizes 2-ft.-H by 3-ft.-W to 5-ft.-H by 16-ft.-W. K-Pro products are available through a network of authorized fabricating distributors.

www.K-Prosteel.com | 196

G Squared

Ceiling Fans

10 Specialties



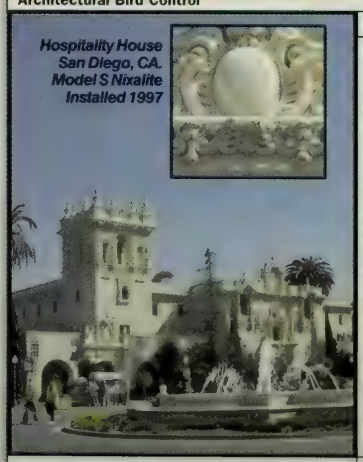
Enjoy art. The Cirque ceiling fan, a high performance dynamic sculpture is a Good Design Award winner. View silver and mahogany blade versions on their Web site. Includes a 50 W dimmable light and touch control system, and a remote control is available. Whisper quiet, powerful, and beautifully made, this timeless design can be used on 8-ft. ceilings or on cathedral ceilings with optional downrods up to 6-ft. long. It is also suitable for sloped ceilings. Lifetime warranty. To buy high-design architectural fans and lighting, please visit G Squared's Web site or call between 6 AM and 6 PM PST.

www.g2art.com | 194

Nixalite of America Inc

Architectural Bird Control | 800-624-1189

10 Specialties



Protect architecture from pest bird mess with Nixalite Bird Control Strips. Made of 316 stainless steel, Nixalite strips create an inconspicuous barrier that stops pest birds from landing, roosting, or nesting. The thin stainless wires are discreet but effective. With 120 points per foot, Nixalite strips offer superior gap-free surface protection. The flexible base strip follows curved surfaces and can be cut easily for custom lengths. Nixalite strips are clean, quiet, and efficient. They outlast and outperform all other steel, plastic, chemical, and electronic bird control methods. Only Nixalite has installations 50-plus years old that still provide perfect bird control. Fax number 800-624-1196. Email birdcontrol@nixalite.com.

www.nixalite.com | 197

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Rais & Wittus Inc.

Fireplaces & Stoves | 914-764-5679



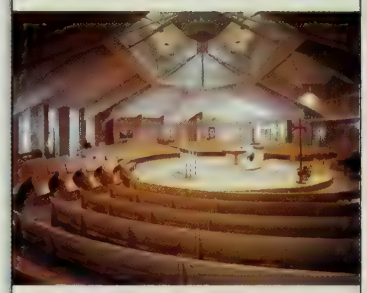
10 Specialties

The RAIS Pina is the ultimate in modernism. It floats on an elegant and simple base. With the optional turntable, it can be turned in any direction, so the fire can be viewed from any part of the room. It's a new and futuristic style, which lends itself to today's contemporary lifestyles and homes. The firebox is equipped with the latest non-catalytic burn technology that assures clean, reliable, and responsible burning. The large glass door is fitted with their patented locking mechanism and stainless steel "cool handle" for ease of operation. RAIS Pina is available in gray or black.

www.raiswittus.com | 198

New Holland Church Furniture

Curved Church Pews | 800-220-1



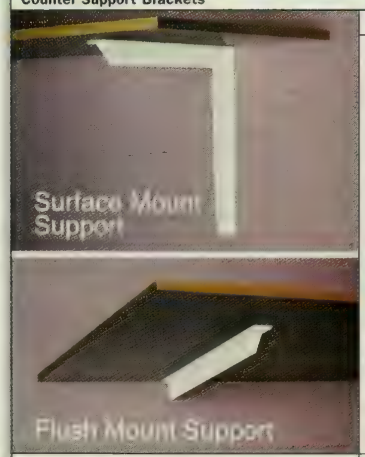
12 Furnishings

Curved pews are "Round Fo
Reason"™ and are designed and m
ufactured by New Holland Ch
Furniture. Curved pews are desig
for maximum seating, curved for
cient use of space, designed
enhance worship, created for com
nity, uniting the family of God. I
Holland Church Furniture is a c
fied member of the Architect
Woodwork Institute (AWI), so you
be assured of the very highest qua
Email nhcw@newhollandwood.com

www.newhollandwood.com

Rangine Corporation / Rakks

Counter Support Brackets



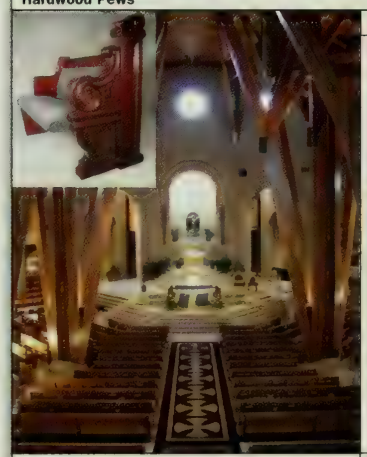
10 Specialties

Rangine Corporation's counter support brackets provide an easy-to-install alternative to full-height laminated panels. They are available in a range of sizes to support counters up to 30-in.-deep. Brackets install easily into studs or blocking and can support loads up to 450-lb. Less expensive than laminated supports, they increase open space while improving handicapped access and ergonomics. Brackets can be ordered in either surface or flush mounted configurations to provide heavy-duty unobtrusive support. Manufactured of extruded structural aluminum, these brackets are lightweight and easy to ship. Stocked in mill aluminum, clear anodized aluminum, off-white powder-coat, and primed finishes.

www.rakks.com | 199

The Marshall Company

Hardwood Pews | 208-642-33



12 Furnishings

For over 75 years, The Marsh
Company has offered distinctive chu
furnishings throughout the U.S. a
Canada. A longtime leader in
church furniture business, Marsh
prides itself on being one of the f
companies in the U.S. to still manufa
ture only quality solid hardwood pe
That means no veneers, no chipboa
cores, no plastic laminates, just
classic beauty and durability of sc
Northern red oak. But materi
aren't everything; Marshall's high
skilled craftsmen are dedicated
designing furniture that is beautiful a
functional, as well as being affordab
Fax number 208-642-9537. Em
pews@marshallpews.com.

www.marshallpews.com | 3

Design 21

Modular Shelf Systems



12 Furnishings

Sistema 1-2-3 is a three step installation system designed by architect Suat Gurtan. Two uprights and the desired amount of shelves are sufficient to start it. Add as your needs grow. All units have a user-centered design, are modular, and the shelf heights are adjustable at ease. Adjustability is particularly useful for the multi-media systems and the bookcases, where the height requirements may change every so often. All systems are anodized aluminum with stainless steel feet. Available in 8-ft. (2,438mm) floor to ceiling model, 7-ft. (2,134mm), 6-ft. (1,828mm), and 5-ft. (1,524mm) floor to wall.

www.design21.com | 320

Finlandia Sauna Products, Inc.

Precut Saunas | 800-354-3342



13 Special construction

Finlandia Sauna has manufactur
exclusive and authentic saunas sin
1964. Finlandia offers precut saun
packages and modular sauna rooms
affordable luxuries that can be include
in any remodel or new construction. Th
company markets four all-clear weste
softwoods and is the only manufactur
to use 1-in. by 4-in. paneling, instead
the cheaper 1/2-in. by 4-in. materi
used by others. Finlandia's package
include all room parts, a choice of
Finnish-made electric heater, a prehun
door with choice of glass, and all nec
essary accessories. Finlandia's excitin
new heater, the EverReady, is an exce
lent option for the person always on th
go. Fax number 503-684-1120. Ema
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FabriTec Structures

Tensile Fabric Structures | 866-275-9710



13 Special construction

FabriTec Structures introduces a new generation of tensile fabric technology. Its highly specialized fabric structures utilize the most advanced architectural materials available and are non-combustible, both thermal- and UV-resistant, and can offer full weather protection. With virtually unlimited design options and applications, FabriTec's products are both practical and often visually spectacular. Designers can choose fabrics from a wide range of color and translucency and enjoy a cost effective and "fast-track" alternative to conventional building systems. FabriTec Structures provides clients with complete design/build services, including concept development, engineering, fabrication, project management, and installation.

www.fabritecstructures.com | 324

Steril-Aire

Air Filtering Systems | 800-2STERIL



15 Mechanical

General products catalog showcases Steril-Aire UVC Emitters™ for mold and microbial control in HVAC systems. The devices enhance IAQ and infection control, reduce absenteeism, save 15%-20% on energy costs, and slash A/C coil cleaning costs. Steril-Aire is a pioneer in "UVC for HVAC™" because its multi-patented devices offer greatly increased output in cold and/or moving air environments, providing superior germicidal performance and longer service life. Products include UVC devices for commercial, residential, health care, school, food processing, and industrial applications. Email sales@steril-aire.com.

www.steril-aire.com | 327

Rocky Mountain Hardware

Card Key Locking Systems



13 Special construction

Rocky Mountain Hardware introduces a unique line of architectural hardware for card key locking systems. Created specifically to meet the needs of boutique hotels and upscale resorts, this new collection is the industry's first hotel locking solution to combine the advanced security features of an electronic locking system with the aesthetic beauty and flexibility of bronze escutcheons and handles. The line features a choice of five standard escutcheon styles that can be combined with one of 28 levers, thus allowing property designers to create their own combinations that blend perfectly with the hotel décor. Custom designs are also available.

www.rockymountainhardware.com | 325

Concealite Life Safety Products

Security Alarms | 507-825-2907



16 Electrical

Concealite has applied its egress lighting technology to a new product line for the security industry. Secure-Alarm provides a convenient and immediate method to alert critical executives and security personnel of a breach in the facility's secure environment. Upon activation by security personnel, Secure-Alarm will rotate 180° and begin flashing. The flashing strobe can be mounted in the walls or ceiling of rooms or hallways and is only visible upon activation by security personnel. For more information contact Concealite Life Safety Products.

www.concealite.com | 328

Ledalite Architectural Products

Lighting Systems



15 Mechanical

PureFX™ is a revolutionary recessed lighting system that utilizes Ledalite's MesoOptics® technology to purify and control light. It offers the perfect blend of brightness, control, and energy efficiency—making happier people and a healthier environment. Visit the Ledalite Web site for more information and to view the PureFX multimedia presentation.

www.ledalite.com | 326

Prima Lighting Corp.

Light Fixtures | 866-885-4915



16 Electrical

The Multi light fixture series gives you complete freedom and control over your light source with high-end, elegant, and intriguing style. Easily direct the light exactly where you want and tailor the power to your needs. Choose a nine, six, four, three, or two light configuration available as a wall (shown), pendant, floor, or table light. Chrome and matte silver finishes. Clean, architectural multipoint canopies are available for the pendants. Please visit Prima Lighting's Web site or call to find out more about its breakthrough OPUS line of contemporary architectural lighting.

www.primalighting.com | 329

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FACULTY POSITIONS

Clemson University
College of Architecture, Arts and Humanities

Chair, School of Architecture

The School of Architecture is seeking applications and nominations for the Chair's position with duties beginning in August 2005. An ideal candidate should demonstrate a distinguished record of nationally or internationally recognized work in practice, research and/or teaching, and possess architectural registration and a professional degree or Ph.D. in architecture. Qualified candidates must demonstrate strong academic leadership, including program stewardship and support of faculty and student development; excellent interpersonal communication skills and the ability to establish and maintain the confidence and respect of faculty, students, staff, alumni, and the professional community.

Applications and nominations will be accepted until the position is filled. Applications received by January 19th, 2005 will be assured full consideration. Applicants should submit a letter of intent, curriculum vitae and the names and contact information of three references to:

Rob Silance
Chair Search Committee
Clemson University
School of Architecture
145 Lee Hall
Clemson, SC 29634-0503

E-mail submissions can be sent to:
silancr@clemson.edu

Women and minorities are encouraged to apply. Clemson University is an Equal Opportunity/Affirmative Action Employer.

Additional departmental information may be found at:

www.clemson.edu/caah/architecture

ARIZONA STATE UNIVERSITY – DIRECTOR and PROFESSOR

The School of Architecture and Landscape Architecture (SALA) in the College of Architecture and Environmental Design (CAED) is seeking a Director to lead the School, with accredited programs in architecture and landscape architecture, in an era of change and immense possibility. The SALA Director position is a full-time position (at full professor rank) with tenure. The Director will collaborate with faculty, staff and stakeholders to develop and implement curriculum; assist faculty in developing their teaching, research and service; be effective in administration; share in cultivating College vision and missions; teach at least one course per year in a studio, lecture, or seminar format; engage in research or creative scholarship; and be an active presence in the School and design community. The required qualifications include: a professional degree in either architecture and/or landscape architecture and/or a doctorate in a field of design, and a record of achievement in the field of architecture and/or landscape architecture appropriate to rank of professor. Desired qualifications include: demonstrated excellence in teaching; administrative experience in a university setting; professional registration; engagement and scholarship with one or more of a wide array of topics, including history/theory, building tectonics, sustainable technologies, practice and the architecture/landscape architecture relationship.

SALA continues to be one of the most highly-rated programs of its kind and features a strong faculty and student body. It is enhanced by programs in Planning, Industrial Design, Interior Design and Graphic Design, which comprise the disciplines of the College. The context surrounding the school is extremely rich as the Phoenix metro region is the fifth largest in the nation and expanding rapidly, thus offering a laboratory for new modes of construction, urbanism, infrastructure, community engagement, and environmental responsiveness. Appropriately, ASU is home to an extensive array of research projects focused on the built environment, sustainability, and immersive visualization technologies. Importantly, the university is in the midst of a massive planning and building campaign in which it has engaged architects and designers of the highest order to build first-rate facilities and new campuses for the New American Metropolitan University model as outlined by the President.

Applicants should submit a letter of interest, addressing areas of teaching and administration, creative activity, research and/or scholarship; a curriculum vitae, transcripts of academic record, examples of course syllabi; evidence of scholarship and where applicable, other creative activity. Please include the names, postal addresses, phone/fax numbers, and e-mail addresses of four referees. Questions may be directed to sara.loughman@asu.edu.

Application deadline is January 31, 2005 and every two weeks thereafter until the search is closed.
Please send applications to:
SALA Director Search Committee, Office of the Dean, College of Architecture and Environmental Design. Arizona State University, PO Box 871905, SW Corner University & Forest, Tempe, AZ 85287-1905. www.asu.edu/caed
AA/EOE.

CONSTRUCTION MANAGEMENT

The Construction Management Program (CMP) at Michigan State University invites applications for a fixed-term non-tenure track position in Construction Management at the specialist Assistant Professor level starting in January 2005. The initial term is for 3-years, with potential to renew depending on performance and availability of funds. Terminal degree will determine position and rank of appointment. Primary responsibilities include: Teaching undergraduate level courses; Conducting funded research projects; Participate in service and outreach activities. Position qualification are as follows: (1) A Master's or PhD degree in Construction Management, Construction Engineering and Management, Architecture, Architectural Engineering, Civil Engineering, or a closely related field; (2) Five years or more of relevant professional experience in construction project management, estimating, and, scheduling; (3) Strong communication and computer skills; (4) Demonstrable ability to teach at the undergraduate level is required in several of the following areas: construction cost estimating; construction project management and administration, construction project scheduling, construction technology, construction material and methods, construction graphics with emphasis on computer-aided-design; (5) A potential for conducting applied research; (6) Relevant professional licensing or certification is desirable. The CMP offers BS (ACCE accredited) and MS degrees and annually enrolls approximately 300 undergraduate students and 25 graduate students. It enjoys a strong reputation within the construction industry. Salary range and structure are competitive with engineering programs. For further information about the construction Management Program at MSU, visit http://www.canr.msu.edu/cm/. Interested applicants should Submit, a complete resume indicating US residency status, a statement of teaching and applied research interests, official transcripts of graduate work, at least three recommendation letters, and, if available, a copy of Masters/Doctoral thesis abstract, to: Dr. Tariq Abdelhamid, Construction Management Program, 207 Farrall Hall, Michigan State University, East Lansing, MI 48824-1323 [Tel: (517) 432-6188, Fax: (517) 355-7711, e-mail: tabdelha@msu.edu]. Applications will be reviewed commencing November 1, 2004 and will be accepted until the position is filled. Women and Minorities are strongly encouraged to apply. Michigan State University is an Equal Opportunity/ Affirmative Action Employer. Persons with disabilities have the right to request and receive reasonable accommodation.

POSITIONS AVAILABLE

INTERN ARCHITECTS (2 POSITIONS)

Assist senior architects to perform architectural design from schematic design to construction documentations and develop design presentations using computer rendering programs. Req.: Min. Bachelor or foreign equiv. in Architecture, and proficiency in computer 3D rendering, incl. AutoCAD 2000, 3DS Max/Viz, and Photoshop. 40 hrs/wk. Send resume to HR Hiring, Michael Brady Inc. 299 N. Weisgarber Road, Knoxville, TN 37919. Fax: (865) 584-5213. Ref. Code: TN-JJY-XW.

ARCHITECTS - ALL LEVELS / ALL SPECIALTIES

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ARCHITECTURAL DESIGNER

Prepare designs, drawings & contract doc. using 3-D Studio, Form-Z, Adobe Illustrator, Adobe Photoshop, Adobe Pagemaker, Quark Express, CAD, AutoCAD & Microstation. Req: Bachelor in Architecture. No license rqd. 40hrs/wk. Job/Interview site: LA, CA. Send resume to Frank R. Webb Architects, Inc. @ 8607 Venice Blvd., LA, CA 90034.

DESIGNER/DRAFTER
STONE BY STONE DESIGN

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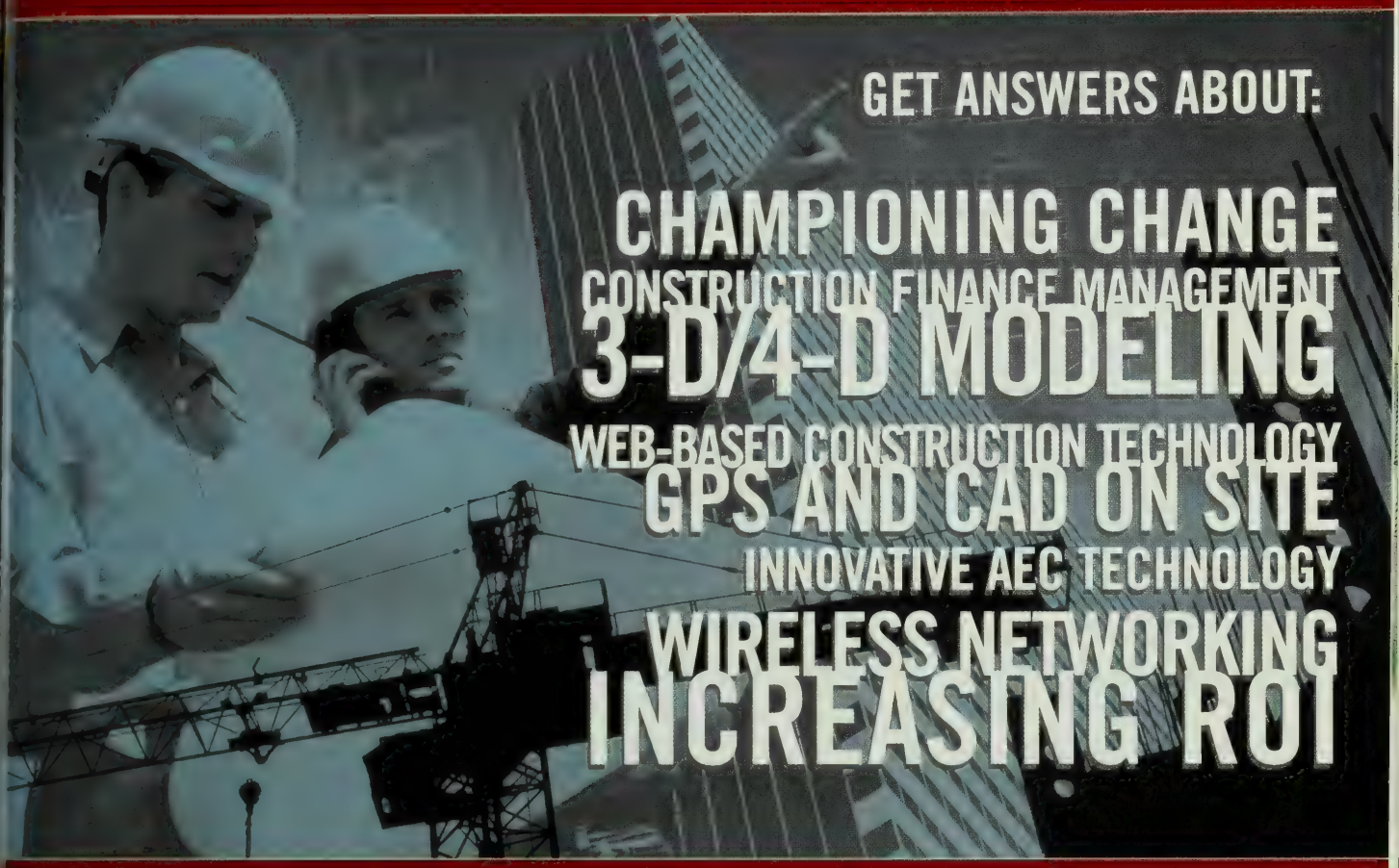
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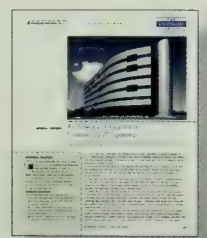
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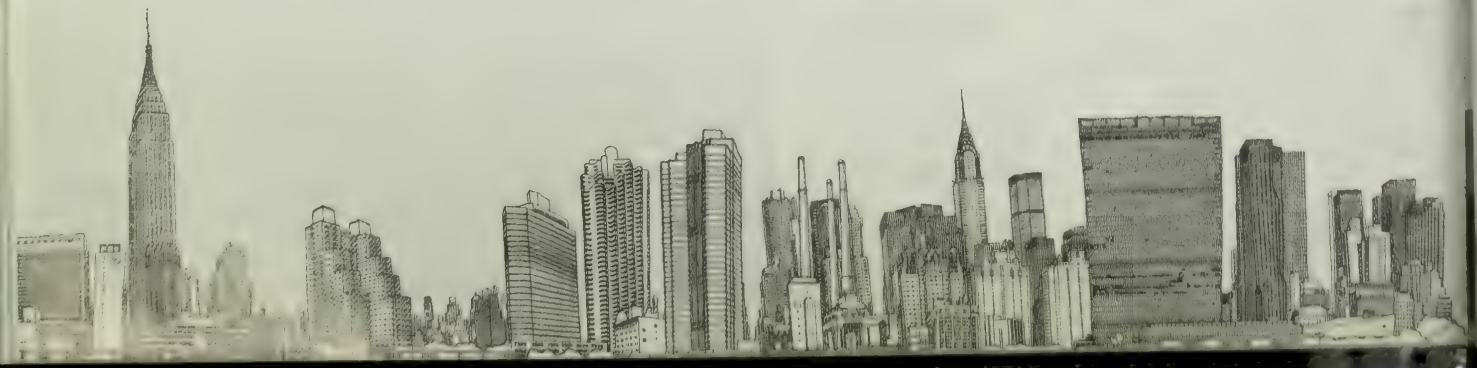


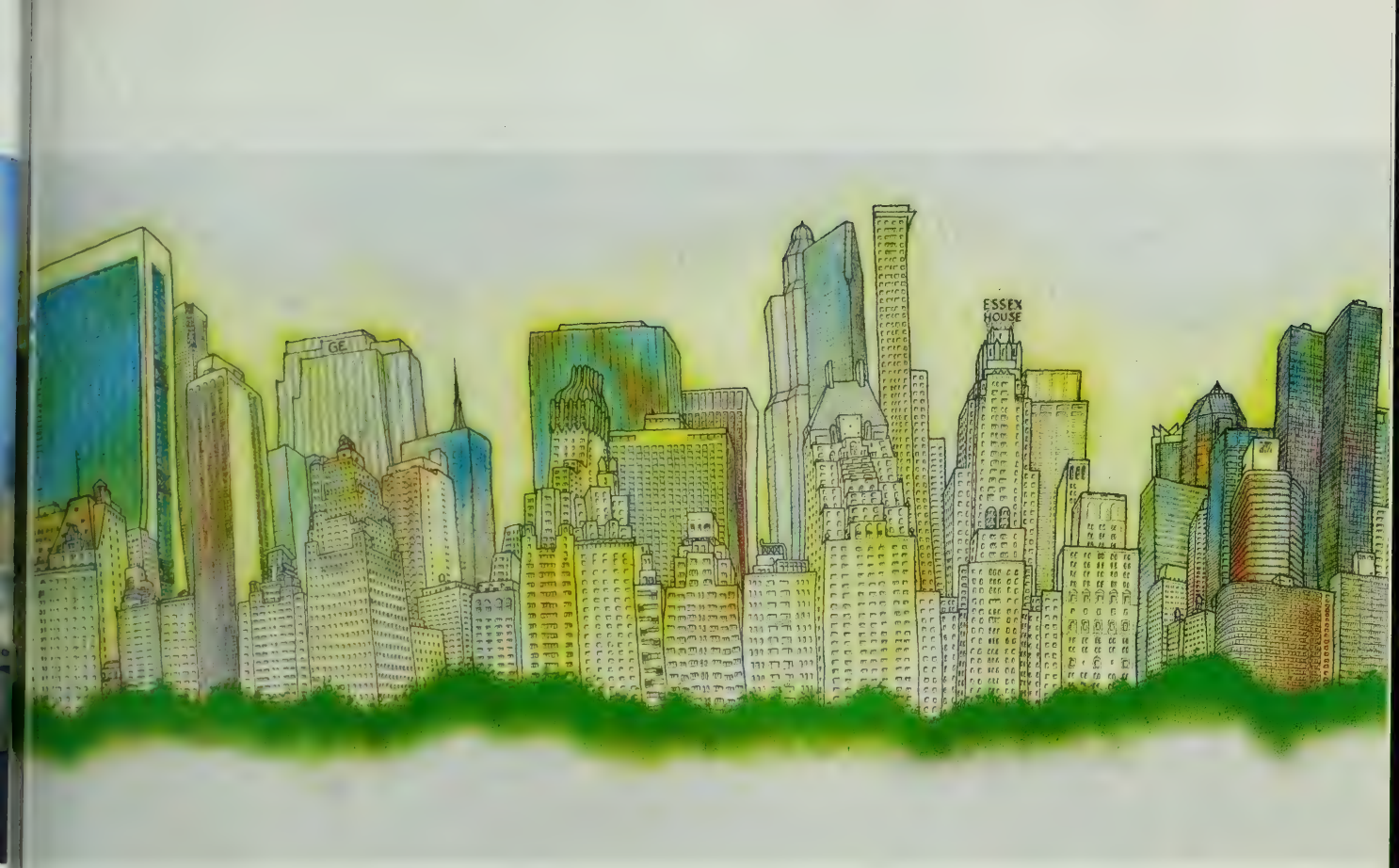
Matteo Pericoli's drawings pay homage to the city he adopted

Interviewed by Deborah Snoonian, P.E.

It took a few Circle Line tours, hundreds of photographs and sketches, and two long rolls of trace paper to get there, but Matteo Pericoli's debut book, a foldout illustration of New York's West and East Side skyliness called Manhattan Unfurled, *became an instant classic when it was released in October 2001. He followed up with* Manhattan Within *and* See the City, *a children's book based on* Unfurled, *which got an exposure boost when the rap group The Beastie Boys used its drawings as cover art for* To the 5 Boroughs, *their album dedicated to New York. Pericoli earned a degree in architecture from the Polytechnic Institute of Milan and moved to New York in 1995, working for a time for Richard Meier on the Jubilee Church in Rome.*

Q: *Why did you turn* Manhattan Unfurled *into a children's book?* When I began drawing the West Side—I didn't know yet that it was going to become a book—I thought to myself, if I can make a drawing out of this apparent or stereotyped chaos of New York that is clear and understandable even to children, then I will have achieved something. So I gave myself a simple rule to handle the complexity of the skyline: to draw everything I saw, not to leave anything behind, that every building is worth drawing because it's Manhattan. I wanted the drawing to appeal to children, too, that's why the waves in the rivers are drawn playfully, like monsters almost. The idea would be that, for children, the skyline is an image, an image that you can



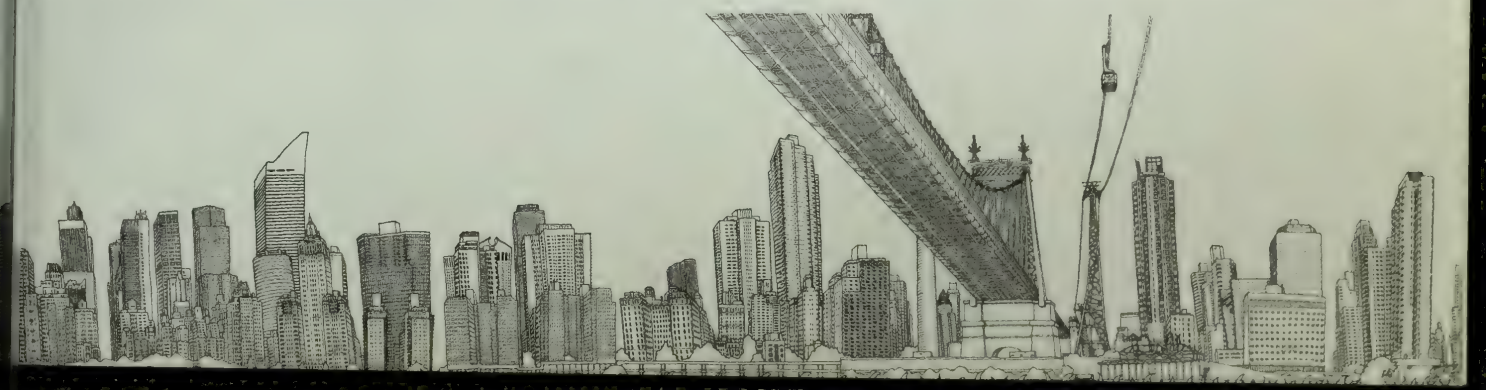


Manhattan Within **(above) shows Pericoli's color renderings of the buildings that ring Central Park, and includes a journal he wrote while he worked on the book. Below, a portion of the east side from *Manhattan Unfurled*.**

change, by adding buildings, or coloring it perhaps.

How have your drawings influenced your relationship with the city? We as Europeans have a view of New York that's informed mostly by movies, commercials, magazines, things like that. When I moved here I was expecting to feel detachment, massive buildings pushing me away. But in reality this place is very different from what anyone can see from far away. I found it to be as difficult as I expected, but at the same time there are neighborhoods and sights not in the guidebooks that make it very livable and humane. And it's antiquated in a way I didn't expect. Going into the subway was like going into the ruins of an ancient city. So, I felt a sense of injustice that much of what I'd been led to believe about New York, and by extension about America, was not true. And I felt a real warmth for the city because of that. That's why I began the first drawing—to understand New York, and to appreciate it.

Do you have a favorite building in Manhattan? I always liked how the U.N. is rotated off the grid. It's the only building that looks out toward the east in a very clear manner. I had nausea while I was working on it because I had to draw all the windows, and then out of curiosity, when I was done, I counted the lines and I found out I had drawn 3,000 lines for that building. Three thousand lines! I probably absorbed it better than I did any other building I



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"THE SKYLINE IS NOT THE SUM OF BUILDINGS AGAINST THE SKY. IT IS SOMETHING THAT TRANSCENDS THE BUILDINGS AND HAS A LIFE OF ITS OWN." ***Matteo Pericoli, from*** **Manhattan Within**



drew because of its orientation—it gave me the whole of itself.

What projects are you working on now? I'm writing and illustrating another children's book, and I'm also thinking about a new drawing project for New York. My wife and I moved recently from the Upper West Side to Jackson Heights, in Queens, and when everything was ready to go, I realized that the view from the window next to where I worked was stuck there, and I wouldn't be able to see it again. Imagine spending seven years working at the same table and glancing up every minute or so through the window; it must have been months of staring. I realized how much my view of the city affected my work and my well-being. So I drew first a sketch and then a larger, more realistic drawing of the view, as if I had been able to peel from the glass what I could see. I took it with me so that I could enjoy this view even from the new place. In New York, the view from the window is incredibly important. It belongs to the interior, not the city. So I'm imagining a book of drawings that would be an encyclopedia of these window views, invisible to everyone else but the people who use and enjoy the view. The drawings would have to include the people, of course, and the window frames themselves, to be complete.

What do you enjoy most about drawing? Each line has an invisible weight of fear and pleasure. In *Manhattan Within*, those big lines that go from bottom to top—like the bridge crossings, zoom!—those were tough, choosing the angle, the orientation. But you have to start somewhere. The thing that can never be taken away from drawing by hand is the fear, the fear of doing something that's real and committed to paper. It's the fear that makes it worth doing.

Photographs by Euclides Santiago

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